ARITH UNIT

1. ASH INSTRUCTION TEST
2. ASHC INSTRUCTION TEST
3. MUL INSTRUCTION TEST
4. DIV INSTRUCTION TEST
5. MUL-DIV RANDOM EXERCISER

IDENTIFICATION

PRODUCT CODE:	MAINDEC-11-DCKBI-A1-D
PRODUCT NAME:	ASH INSTRUCTION TEST
DATE CREATED:	MARCH 15, 1972
MAINTAINER:	DIAGNOSTIC GROUP
AUTHOR:	B. BRAIN

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1,0 ABSTRACT

THIS PROGRAM WILL INCREMENTLY TEST AND ISOLATE SIMPLE MALFUNCTIONS
RELATED TO THE ASH INSTRUCTION

2,0 REQUIREMENTS

2,1 EQUIPMENT
BASIC 11/45 SYSTEM OR
11/40 WITH KE11-E OPTION

2,2 STORAGE
THIS PROGRAM USES 0 THRU 17500

2,3 PRELIMINARY PROGRAMS
D0AA THRU D0MA

3,0 LOADING PROCEDURE
LOAD PROGRAM USING ABS LOADER

4,0 STARTING PROCEDURE
LOAD ADDRESS 200, PRESS START, THE PROGRAM WILL LOOP
AND RING BELL ON PASS COMPLETION.

5,0 OPERATING PROCEDURE

5,1 SWITCH SETTINGS
NONE

5,2 SUBROUTINE ABSTRACTS

5,2,1 SCOPE
SCOPE IS A MOVE PC,R1 AND STORES THE PC+2 IN R1.

5,2,2 HLT
HLT IS A HALT INSTRUCTION.

6,0 ERRORS
ALL ERRORS WILL CAUSE A HALT
TRAP AND INTERRUPT ERRORS WILL CAUSE A HALT AT VECTOR+2.

6,1 ERROR RECOVERY
PRESS CONTINUE TO PROCEDE TO NEXT TEST

6,2 ERROR LOOPING
TO LOOP ON AN ERROR, PLACE A BRANCH TO THE PREVIOUS SCOPE
INSTRUCTION IN PLACE OF THE HALT INSTRUCTION.
NOTE THAT IF THE ERROR IS INTERMITTANT THAT THE TEST WILL
DROP THRU THE HALT AND PROCEED TO THE NEXT TEST.
THEREFORE, TO LOOP THE TEST CONTINUOSLY REPLACE THE BEQ .+4
INSTRUCTION IMMEDIATLY PRECEEDING THE HALT WITH A BRANCH
BACK TO THE PREVIOUS SCOPE.

TO LOOP ON TRAP FAILURES, PATCH IN THE FOLLOWING ROUTINE
AT THE ADDRESS OF THE TRAP VECTOR.

```
TRAPVEC:        TRAPVEC+4
TRAPVEC+2:      0
TRAPVEC+4:      012716  ;MOVE SCOPE ADDRESS TO STACK
TRAPVEC+6:      ADDRESS ;ADDRESS OF PREVIOUS SCOPE
TRAPVEC+10:     000006  ;RETURN TO TEST AT SCOPE
```

RESTORE ALL LOCATIONS BEFORE PROCEEDING TO NEXT TEST.

7,0 RESTRICTIONS
NONE

8,0 MISCELLANEOUS
ON TRAP ERRORS THE STACK POINTER(R6) WILL CONTAIN THE ADDRESS WHERE THE TRAP OCCURED.

8,1 EXECUTION TIME
THE PROGRAM TAKES ABOUT 1 MINUTE.

8,2 STACK POINTER
THIS PROGRAM INITIALLY SETS THE STACK POINTER AT 500.

9,0 PROGRAM DESCRIPTION

THIS IS A TEST OF THE ASH INSTRUCTION, IT TESTS ASH WITH DIFFERENT SHIFT COUNTS IN ALL THE REGISTERS.

```
                                        .TITLE  MAINDEC-11-DCKBI-A  ASH TEST
                                        ;COPYRIGHT 1972, DIGITAL EQUIPMENT CORP., MAYNARD, MASS
                                        ;PROGRAM BY ROB BRAIN

                                        .ENABL  ABS
            010701                      SCOPE=  10701
            000000                      HLT=    HALT
            177776                      PS=     177776
            177570                      SWR=    177570
            177570                      DISPLAY=SWR
            000001                      N=      1
            000000                      DUMMY=  HALT
            000000                      M=0

            000000                      .=0                             ;TRAP CATCHER 0 - 776

            000200                      .=200
000200      000167  000576                      JMP     BEG
            001000                      .=1000
001000      000000                      ICNT:   0                       ;PASS COUNT

001002      012706  000500              BEG:    MOV     #500,X6         ; ** STACK AT 500 **
001006      005037  177776                      CLR     @#PS
001012      032737  001000  177570              BIT     #1000,@#SWR     ;WHICH REGISTER SET?
001020      001403                      BEQ     .+10
001022      012737  004000  177776              MOV     #4000,@#PS      ;ALTERNATE!
001030      032737  000400  177570              BIT     #400,@#SWR      ;LOAD UB REG??
001036      001403                      BEQ     .+10
001040      113737  177570  177770              MOVB    @#SWR,@#177770
```

```
                                ;*****************************************************************
                                ;TEST 1   ASH     0 SHIFTED BY -16. = 0  PS = 4
                                ;*****************************************************************

001046  010701                          SCOPE
001050  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
001054  072027  177760                  ASH     #-16.,%0        ;SHIFT R0 BY -16.
001060  013767  177776  012552          MOV     @#PS,PSW        ;SAVE PS
001066  122767  000004  012544          CMPB    #4,PSW          ;IS THE PS 4?
001074  001401                          BEQ     .+4
001076  000000                          HLT                     ;THE PS IS NOT EQUAL TO 4
001100  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
001104  001401                          BEQ     .+4
001106  000000                          HLT                     ;R0 IS NOT EQUAL TO 0


                                ;*****************************************************************
                                ;TEST 2   ASH     0 SHIFTED BY 0 = 0  PS = 4
                                ;*****************************************************************

001110  010701                          SCOPE
001112  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
001116  072027  000000                  ASH     #0,%0           ;SHIFT R0 BY 0
001122  013767  177776  012510          MOV     @#PS,PSW        ;SAVE PS
001130  122767  000004  012502          CMPB    #4,PSW          ;IS THE PS 4?
001136  001401                          BEQ     .+4
001140  000000                          HLT                     ;THE PS IS NOT EQUAL TO 4
001142  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
001146  001401                          BEQ     .+4
001150  000000                          HLT                     ;R0 IS NOT EQUAL TO 0


                                ;*****************************************************************
                                ;TEST 3   ASH     0 SHIFTED BY 16. = 0  PS = 4
                                ;*****************************************************************

001152  010701                          SCOPE
001154  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
001160  072027  000020                  ASH     #16.,%0         ;SHIFT R0 BY 16.
001164  013767  177776  012446          MOV     @#PS,PSW        ;SAVE PS
001172  122767  000004  012440          CMPB    #4,PSW          ;IS THE PS 4?
001200  001401                          BEQ     .+4
001202  000000                          HLT                     ;THE PS IS NOT EQUAL TO 4
001204  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
001210  001401                          BEQ     .+4
001212  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
```

```
                                ;*****************************************************************
                                ;TEST 4   ASH     1 SHIFTED BY 0 = 1  PS = 0
                                ;*****************************************************************

001214  012701                          SCOPE
001216  012700  000001                  MOV     #1,%0           ;LOAD R0 WITH 1
001222  072027  000000                  ASH     #0,%0           ;SHIFT R0 BY 0
001226  013767  177776  012404          MOV     @#PS,PSW        ;SAVE PS
001234  122767  000000  012376          CMPB    #0,PSW          ;IS THE PS 0?
001242  001401                          BEQ     .+4
001244  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
001246  022700  000001                  CMP     #1,%0           ;IS THE RESULT 1?
001252  001401                          BEQ     .+4
001254  000000                          HLT                     ;R0 IS NOT EQUAL TO 1


                                ;*****************************************************************
                                ;TEST 5   ASH     1 SHIFTED BY 1 = 2  PS = 0
                                ;*****************************************************************

001256  010701                          SCOPE
001260  012700  000001                  MOV     #1,%0           ;LOAD R0 WITH 1
001264  072027  000001                  ASH     #1,%0           ;SHIFT R0 BY 1
001270  013767  177776  012342          MOV     @#PS,PSW        ;SAVE PS
001276  122767  000000  012334          CMPB    #0,PSW          ;IS THE PS 0?
001304  001401                          BEQ     .+4
001306  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
001310  022700  000002                  CMP     #2,%0           ;IS THE RESULT 2?
001314  001401                          BEQ     .+4
001316  000000                          HLT                     ;R0 IS NOT EQUAL TO 2


                                ;*****************************************************************
                                ;TEST 6   ASH     1 SHIFTED BY 2 = 4  PS = 0
                                ;*****************************************************************

001320  010701                          SCOPE
001322  012700  000001                  MOV     #1,%0           ;LOAD R0 WITH 1
001326  072027  000002                  ASH     #2,%0           ;SHIFT R0 BY 2
001332  013767  177776  012300          MOV     @#PS,PSW        ;SAVE PS
001340  122767  000000  012272          CMPB    #0,PSW          ;IS THE PS 0?
001346  001401                          BEQ     .+4
001350  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
001352  022700  000004                  CMP     #4,%0           ;IS THE RESULT 4?
001356  001401                          BEQ     .+4
001360  000000                          HLT                     ;R0 IS NOT EQUAL TO 4
```

```
                                ;*****************************************************************
                                ;TEST 7   ASH     1 SHIFTED BY 3 = 10  PS = 0
                                ;*****************************************************************

001362  010701                          SCOPE
001364  012700  000001                  MOV     #1,%0           ;LOAD R0 WITH 1
001370  072027  000003                  ASH     #3,%0           ;SHIFT R0 BY 3
001374  013767  177776  012236          MOV     @#PS,PSW        ;SAVE PS
001402  122767  000000  012230          CMPB    #0,PSW          ;IS THE PS 0?
001410  001401                          BEQ     .+4
001412  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
001414  022700  000010                  CMP     #10,%0          ;IS THE RESULT 10?
001420  001401                          BEQ     .+4
001422  000000                          HLT                     ;R0 IS NOT EQUAL TO 10


                                ;*****************************************************************
                                ;TEST 10   ASH     1 SHIFTED BY 4 = 20  PS = 0
                                ;*****************************************************************

001424  010701                          SCOPE
001426  012700  000001                  MOV     #1,%0           ;LOAD R0 WITH 1
001432  072027  000004                  ASH     #4,%0           ;SHIFT R0 BY 4
001436  013767  177776  012174          MOV     @#PS,PSW        ;SAVE PS
001444  122767  000000  012166          CMPB    #0,PSW          ;IS THE PS 0?
001452  001401                          BEQ     .+4
001454  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
001456  022700  000020                  CMP     #20,%0          ;IS THE RESULT 20?
001462  001401                          BEQ     .+4
001464  000000                          HLT                     ;R0 IS NOT EQUAL TO 20


                                ;*****************************************************************
                                ;TEST 11   ASH     1 SHIFTED BY 5 = 40  PS = 0
                                ;*****************************************************************

001466  010701                          SCOPE
001470  012700  000001                  MOV     #1,%0           ;LOAD R0 WITH 1
001474  072027  000005                  ASH     #5,%0           ;SHIFT R0 BY 5
001500  013767  177776  012132          MOV     @#PS,PSW        ;SAVE PS
001506  122767  000000  012124          CMPB    #0,PSW          ;IS THE PS 0?
001514  001401                          BEQ     .+4
001516  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
001520  022700  000040                  CMP     #40,%0          ;IS THE RESULT 40?
001524  001401                          BEQ     .+4
001526  000000                          HLT                     ;R0 IS NOT EQUAL TO 40
```

```
                                ;*****************************************************************
                                ;TEST 12   ASH     1 SHIFTED BY 6 = 100  PS = 0
                                ;*****************************************************************

001530  010701                          SCOPE
001532  012700  000001                  MOV     #1,%0           ;LOAD R0 WITH 1
001536  072027  000006                  ASH     #6,%0           ;SHIFT R0 BY 6
001542  013767  177776  012070          MOV     @#PS,PSW        ;SAVE PS
001550  122767  000000  012062          CMPB    #0,PSW          ;IS THE PS 0?
001556  001401                          BEQ     .+4
001560  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
001562  022700  000100                  CMP     #100,%0         ;IS THE RESULT 100?
001566  001401                          BEQ     .+4
001570  000000                          HLT                     ;R0 IS NOT EQUAL TO 100


                                ;*****************************************************************
                                ;TEST 13   ASH     1 SHIFTED BY 7 = 200  PS = 0
                                ;*****************************************************************

001572  010701                          SCOPE
001574  012700  000001                  MOV     #1,%0           ;LOAD R0 WITH 1
001600  072027  000007                  ASH     #7,%0           ;SHIFT R0 BY 7
001604  013767  177776  012026          MOV     @#PS,PSW        ;SAVE PS
001612  122767  000000  012020          CMPB    #0,PSW          ;IS THE PS 0?
001620  001401                          BEQ     .+4
001622  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
001624  022700  000200                  CMP     #200,%0         ;IS THE RESULT 200?
001630  001401                          BEQ     .+4
001632  000000                          HLT                     ;R0 IS NOT EQUAL TO 200


                                ;*****************************************************************
                                ;TEST 14   ASH     1 SHIFTED BY 10 = 400  PS = 0
                                ;*****************************************************************

001634  010701                          SCOPE
001636  012700  000001                  MOV     #1,%0           ;LOAD R0 WITH 1
001642  072027  000010                  ASH     #10,%0          ;SHIFT R0 BY 10
001646  013767  177776  011764          MOV     @#PS,PSW        ;SAVE PS
001654  122767  000000  011756          CMPB    #0,PSW          ;IS THE PS 0?
001662  001401                          BEQ     .+4
001664  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
001666  022700  000400                  CMP     #400,%0         ;IS THE RESULT 400?
001672  001401                          BEQ     .+4
001674  000000                          HLT                     ;R0 IS NOT EQUAL TO 400
```

```
                                ;*****************************************************************
                                ;TEST 15   ASH     1 SHIFTED BY 11 = 1000  PS = 0
                                ;*****************************************************************

001676  010701                          SCOPE
001700  012700  000001                   MOV     #1,%0           ;LOAD R0 WITH 1
001704  072027  000011                   ASH     #11,%0          ;SHIFT R0 BY 11
001710  013767  177776  011722           MOV     @#PS,PSW        ;SAVE PS
001716  122767  000000  011714           CMPB    #0,PSW          ;IS THE PS 0?
001724  001401                           BEQ     .+4
001726  000000                           HLT                     ;THE PS IS NOT EQUAL TO 0
001730  022700  001000                   CMP     #1000,%0        ;IS THE RESULT 1000?
001734  001401                           BEQ     .+4
001736  000000                           HLT                     ;R0 IS NOT EQUAL TO 1000


                                ;*****************************************************************
                                ;TEST 16   ASH     1 SHIFTED BY 12 = 2000  PS = 0
                                ;*****************************************************************

001740  010701                          SCOPE
001742  012700  000001                   MOV     #1,%0           ;LOAD R0 WITH 1
001746  072027  000012                   ASH     #12,%0          ;SHIFT R0 BY 12
001752  013767  177776  011660           MOV     @#PS,PSW        ;SAVE PS
001760  122767  000000  011652           CMPB    #0,PSW          ;IS THE PS 0?
001766  001401                           BEQ     .+4
001770  000000                           HLT                     ;THE PS IS NOT EQUAL TO 0
001772  022700  002000                   CMP     #2000,%0        ;IS THE RESULT 2000?
001776  001401                           BEQ     .+4
002000  000000                           HLT                     ;R0 IS NOT EQUAL TO 2000


                                ;*****************************************************************
                                ;TEST 17   ASH     1 SHIFTED BY 13 = 4000  PS = 0
                                ;*****************************************************************

002002  010701                          SCOPE
002004  012700  000001                   MOV     #1,%0           ;LOAD R0 WITH 1
002010  072027  000013                   ASH     #13,%0          ;SHIFT R0 BY 13
002014  013767  177776  011616           MOV     @#PS,PSW        ;SAVE PS
002022  122767  000000  011610           CMPB    #0,PSW          ;IS THE PS 0?
002030  001401                           BEQ     .+4
002032  000000                           HLT                     ;THE PS IS NOT EQUAL TO 0
002034  022700  004000                   CMP     #4000,%0        ;IS THE RESULT 4000?
002040  001401                           BEQ     .+4
002042  000000                           HLT                     ;R0 IS NOT EQUAL TO 4000
```

```
                                ;*****************************************************************
                                ;TEST 20   ASH     1 SHIFTED BY 14 = 10000  PS = 0
                                ;*****************************************************************

002044  010701                          SCOPE
002046  012700  000001                  MOV     #1,%0           ;LOAD R0 WITH 1
002052  072027  000014                  ASH     #14,%0          ;SHIFT R0 BY 14
002056  013767  177776  011554          MOV     @#PS,PSW        ;SAVE PS
002064  122767  000000  011546          CMPB    #0,PSW          ;IS THE PS 0?
002072  001401                          BEQ     .+4
002074  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002076  022700  010000                  CMP     #10000,%0       ;IS THE RESULT 10000?
002102  001401                          BEQ     .+4
002104  000000                          HLT                     ;R0 IS NOT EQUAL TO 10000


                                ;*****************************************************************
                                ;TEST 21   ASH     1 SHIFTED BY 15 = 20000  PS = 0
                                ;*****************************************************************

002106  010701                          SCOPE
002110  012700  000001                  MOV     #1,%0           ;LOAD R0 WITH 1
002114  072027  000015                  ASH     #15,%0          ;SHIFT R0 BY 15
002120  013767  177776  011512          MOV     @#PS,PSW        ;SAVE PS
002126  122767  000000  011504          CMPB    #0,PSW          ;IS THE PS 0?
002134  001401                          BEQ     .+4
002136  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002140  022700  020000                  CMP     #20000,%0       ;IS THE RESULT 20000?
002144  001401                          BEQ     .+4
002146  000000                          HLT                     ;R0 IS NOT EQUAL TO 20000


                                ;*****************************************************************
                                ;TEST 22   ASH     1 SHIFTED BY 16 = 40000  PS = 0
                                ;*****************************************************************

002150  010701                          SCOPE
002152  012700  000001                  MOV     #1,%0           ;LOAD R0 WITH 1
002156  072027  000016                  ASH     #16,%0          ;SHIFT R0 BY 16
002162  013767  177776  011450          MOV     @#PS,PSW        ;SAVE PS
002170  122767  000000  011442          CMPB    #0,PSW          ;IS THE PS 0?
002176  001401                          BEQ     .+4
002200  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002202  022700  040000                  CMP     #40000,%0       ;IS THE RESULT 40000?
002206  001401                          BEQ     .+4
002210  000000                          HLT                     ;R0 IS NOT EQUAL TO 40000
```

```
                                ;*****************************************************************
                                ;TEST 23   ASH     40000 SHIFTED BY 177762 = 1  PS = 0
                                ;*****************************************************************

002212  010701                          SCOPE
002214  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
002220  072027  177762                  ASH     #177762,%0      ;SHIFT R0 BY 177762
002224  013767  177776  011406          MOV     @#PS,PSW        ;SAVE PS
002232  122767  000000  011400          CMPB    #0,PSW          ;IS THE PS 0?
002240  001401                          BEQ     .+4
002242  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002244  022700  000001                  CMP     #1,%0           ;IS THE RESULT 1?
002250  001401                          BEQ     .+4
002252  000000                          HLT                     ;R0 IS NOT EQUAL TO 1


                                ;*****************************************************************
                                ;TEST 24   ASH     40000 SHIFTED BY 177763 = 2  PS = 0
                                ;*****************************************************************

002254  010701                          SCOPE
002256  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
002262  072027  177763                  ASH     #177763,%0      ;SHIFT R0 BY 177763
002266  013767  177776  011344          MOV     @#PS,PSW        ;SAVE PS
002274  122767  000000  011336          CMPB    #0,PSW          ;IS THE PS 0?
002302  001401                          BEQ     .+4
002304  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002306  022700  000002                  CMP     #2,%0           ;IS THE RESULT 2?
002312  001401                          BEQ     .+4
002314  000000                          HLT                     ;R0 IS NOT EQUAL TO 2


                                ;*****************************************************************
                                ;TEST 25   ASH     40000 SHIFTED BY 177764 = 4  PS = 0
                                ;*****************************************************************

002316  010701                          SCOPE
002320  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
002324  072027  177764                  ASH     #177764,%0      ;SHIFT R0 BY 177764
002330  013767  177776  011302          MOV     @#PS,PSW        ;SAVE PS
002336  122767  000000  011274          CMPB    #0,PSW          ;IS THE PS 0?
002344  001401                          BEQ     .+4
002346  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002350  022700  000004                  CMP     #4,%0           ;IS THE RESULT 4?
002354  001401                          BEQ     .+4
002356  000000                          HLT                     ;R0 IS NOT EQUAL TO 4
```

```
                                ;*****************************************************************
                                ;TEST 26   ASH     40000 SHIFTED BY 177765 = 10  PS = 0
                                ;*****************************************************************

002360  010701                          SCOPE
002362  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
002366  072027  177765                  ASH     #177765,%0      ;SHIFT R0 BY 177765
002372  013767  177776  011240          MOV     @#PS,PSW        ;SAVE PS
002400  122767  000020  011232          CMPB    #0,PSW          ;IS THE PS 0?
002406  001401                          BEQ     .+4
002410  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002412  022700  000010                  CMP     #10,%0          ;IS THE RESULT 10?
002416  001401                          BEQ     .+4
002420  000000                          HLT                     ;R0 IS NOT EQUAL TO 10


                                ;*****************************************************************
                                ;TEST 27   ASH     40000 SHIFTED BY 177766 = 20  PS = 0
                                ;*****************************************************************

002422  010701                          SCOPE
002424  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
002430  072027  177766                  ASH     #177766,%0      ;SHIFT R0 BY 177766
002434  013767  177776  011176          MOV     @#PS,PSW        ;SAVE PS
002442  122767  000000  011170          CMPB    #0,PSW          ;IS THE PS 0?
002450  001401                          BEQ     .+4
002452  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002454  022700  000020                  CMP     #20,%0          ;IS THE RESULT 20?
002460  001401                          BEQ     .+4
002462  000000                          HLT                     ;R0 IS NOT EQUAL TO 20


                                ;*****************************************************************
                                ;TEST 30   ASH     40000 SHIFTED BY 177767 = 40  PS = 0
                                ;*****************************************************************

002464  010701                          SCOPE
002466  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
002472  072027  177767                  ASH     #177767,%0      ;SHIFT R0 BY 177767
002476  013767  177776  011134          MOV     @#PS,PSW        ;SAVE PS
002504  122767  000000  011126          CMPB    #0,PSW          ;IS THE PS 0?
002512  001401                          BEQ     .+4
002514  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002516  022700  000040                  CMP     #40,%0          ;IS THE RESULT 40?
002522  001401                          BEQ     .+4
002524  000000                          HLT                     ;R0 IS NOT EQUAL TO 40
```

```
                                ;*****************************************************************
                                ;TEST 31   ASH     40000 SHIFTED BY 177770 = 100  PS = 0
                                ;*****************************************************************

002526  010701                          SCOPE
002530  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
002534  072027  177770                  ASH     #177770,%0      ;SHIFT R0 BY 177770
002540  013767  177776  011072          MOV     @#PS,PSW        ;SAVE PS
002546  122767  000000  011064          CMPB    #0,PSW          ;IS THE PS 0?
002554  001401                          BEQ     .+4
002556  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002560  022700  000100                  CMP     #100,%0         ;IS THE RESULT 100?
002564  001401                          BEQ     .+4
002566  000000                          HLT                     ;R0 IS NOT EQUAL TO 100


                                ;*****************************************************************
                                ;TEST 32   ASH     40000 SHIFTED BY 177771 = 200  PS = 0
                                ;*****************************************************************

002570  010701                          SCOPE
002572  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
002576  072027  177771                  ASH     #177771,%0      ;SHIFT R0 BY 177771
002602  013767  177776  011030          MOV     @#PS,PSW        ;SAVE PS
002610  122767  000000  011022          CMPB    #0,PSW          ;IS THE PS 0?
002616  001401                          BEQ     .+4
002620  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002622  022700  000200                  CMP     #200,%0         ;IS THE RESULT 200?
002626  001401                          BEQ     .+4
002630  000000                          HLT                     ;R0 IS NOT EQUAL TO 200


                                ;*****************************************************************
                                ;TEST 33   ASH     40000 SHIFTED BY 177772 = 400  PS = 0
                                ;*****************************************************************

002632  010701                          SCOPE
002634  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
002640  072027  177772                  ASH     #177772,%0      ;SHIFT R0 BY 177772
002644  013767  177776  010766          MOV     @#PS,PSW        ;SAVE PS
002652  122767  000000  010760          CMPB    #0,PSW          ;IS THE PS 0?
002660  001401                          BEQ     .+4
002662  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002664  022700  000400                  CMP     #400,%0         ;IS THE RESULT 400?
002670  001401                          BEQ     .+4
002672  000000                          HLT                     ;R0 IS NOT EQUAL TO 400
```

```
                                ;*****************************************************************
                                ;TEST 34   ASH     40000 SHIFTED BY 177773 = 1000  PS = 0
                                ;*****************************************************************

002674  010701                          SCOPE
002676  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
002702  072027  177773                  ASH     #177773,%0      ;SHIFT R0 BY 177773
002706  013767  177776  010724          MOV     @#PS,PSW        ;SAVE PS
002714  122767  000000  010716          CMPB    #0,PSW          ;IS THE PS 0?
002722  001401                          BEQ     .+4
002724  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002726  022700  001000                  CMP     #1000,%0        ;IS THE RESULT 1000?
002732  001401                          BEQ     .+4
002734  000000                          HLT                     ;R0 IS NOT EQUAL TO 1000


                                ;*****************************************************************
                                ;TEST 35   ASH     40000 SHIFTED BY 177774 = 2000  PS = 0
                                ;*****************************************************************

002736  010701                          SCOPE
002740  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
002744  072027  177774                  ASH     #177774,%0      ;SHIFT R0 BY 177774
002750  013767  177776  010662          MOV     @#PS,PSW        ;SAVE PS
002756  122767  000000  010654          CMPB    #0,PSW          ;IS THE PS 0?
002764  001401                          BEQ     .+4
002766  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002770  022700  002000                  CMP     #2000,%0        ;IS THE RESULT 2000?
002774  001401                          BEQ     .+4
002776  000000                          HLT                     ;R0 IS NOT EQUAL TO 2000


                                ;*****************************************************************
                                ;TEST 36   ASH     40000 SHIFTED BY 177775 = 4000  PS = 0
                                ;*****************************************************************

003000  010701                          SCOPE
003002  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
003006  072027  177775                  ASH     #177775,%0      ;SHIFT R0 BY 177775
003012  013767  177776  010620          MOV     @#PS,PSW        ;SAVE PS
003020  122767  000000  010612          CMPB    #0,PSW          ;IS THE PS 0?
003026  001401                          BEQ     .+4
003030  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
003032  022700  004000                  CMP     #4000,%0        ;IS THE RESULT 4000?
003036  001401                          BEQ     .+4
003040  000000                          HLT                     ;R0 IS NOT EQUAL TO 4000
```

```
                                ;*****************************************************************
                                ;TEST 37   ASH     40000 SHIFTED BY 177776 = 10000  PS = 0
                                ;*****************************************************************

003042  010701                          SCOPE
003044  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
003050  072027  177776                  ASH     #177776,%0      ;SHIFT R0 BY 177776
003054  013767  177776  010556          MOV     @#PS,PSW        ;SAVE PS
003062  122767  000000  010550          CMPB    #0,PSW          ;IS THE PS 0?
003070  001401                          BEQ     .+4
003072  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
003074  022700  010000                  CMP     #10000,%0       ;IS THE RESULT 10000?
003100  001401                          BEQ     .+4
003102  000000                          HLT                     ;R0 IS NOT EQUAL TO 10000


                                ;*****************************************************************
                                ;TEST 40   ASH     40000 SHIFTED BY 177777 = 20000  PS = 0
                                ;*****************************************************************

003104  010701                          SCOPE
003106  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
003112  072027  177777                  ASH     #177777,%0      ;SHIFT R0 BY 177777
003116  013767  177776  010514          MOV     @#PS,PSW        ;SAVE PS
003124  122767  000000  010506          CMPB    #0,PSW          ;IS THE PS 0?
003132  001401                          BEQ     .+4
003134  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
003136  022700  020000                  CMP     #20000,%0       ;IS THE RESULT 20000?
003142  001401                          BEQ     .+4
003144  000000                          HLT                     ;R0 IS NOT EQUAL TO 20000


                                ;*****************************************************************
                                ;TEST 41   ASH     40000 SHIFTED BY 0 = 40000  PS = 0
                                ;*****************************************************************

003146  010701                          SCOPE
003150  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
003154  072027  000000                  ASH     #0,%0           ;SHIFT R0 BY 0
003160  013767  177776  010452          MOV     @#PS,PSW        ;SAVE PS
003166  122767  000000  010444          CMPB    #0,PSW          ;IS THE PS 0?
003174  001401                          BEQ     .+4
003176  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
003200  022700  040000                  CMP     #40000,%0       ;IS THE RESULT 40000?
003204  001401                          BEQ     .+4
003206  000000                          HLT                     ;R0 IS NOT EQUAL TO 40000
```

```
                                ;*****************************************************************
                                ;TEST 42   ASH     100000 SHIFTED BY -15. = -1  PS = 10
                                ;*****************************************************************

003210  010701                          SCOPE
003212  012700  100000                  MOV     #100000,%0      ;LOAD R0 WITH 100000
003216  072027  177761                  ASH     #-15.,%0        ;SHIFT R0 BY -15.
003222  013767  177776  010410          MOV     @#PS,PSW        ;SAVE PS
003230  122767  000010  010402          CMPB    #10,PSW         ;IS THE PS 10?
003236  001401                          BEQ     .+4
003240  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
003242  022700  177777                  CMP     #-1,%0          ;IS THE RESULT -1?
003246  001401                          BEQ     .+4
003250  000000                          HLT                     ;R0 IS NOT EQUAL TO -1


                                ;*****************************************************************
                                ;TEST 43   ASH     -1 SHIFTED BY 15. = 100000  PS = 11
                                ;*****************************************************************

003252  010701                          SCOPE
003254  012700  177777                  MOV     #-1,%0          ;LOAD R0 WITH -1
003260  072027  000017                  ASH     #15.,%0         ;SHIFT R0 BY 15.
003264  013767  177776  010346          MOV     @#PS,PSW        ;SAVE PS
003272  122767  000011  010340          CMPB    #11,PSW         ;IS THE PS 11?
003300  001401                          BEQ     .+4
003302  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
003304  022700  100000                  CMP     #100000,%0      ;IS THE RESULT 100000?
003310  001401                          BEQ     .+4
003312  000000                          HLT                     ;R0 IS NOT EQUAL TO 100000


                                ;*****************************************************************
                                ;TEST 44   ASH     -1 SHIFTED BY 16. = 0  PS = 7
                                ;*****************************************************************

003314  010701                          SCOPE
003316  012700  177777                  MOV     #-1,%0          ;LOAD R0 WITH -1
003322  072027  000020                  ASH     #16.,%0         ;SHIFT R0 BY 16.
003326  013767  177776  010304          MOV     @#PS,PSW        ;SAVE PS
003334  122767  000007  010276          CMPB    #7,PSW          ;IS THE PS 7?
003342  001401                          BEQ     .+4
003344  000000                          HLT                     ;THE PS IS NOT EQUAL TO 7
003346  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
003352  001401                          BEQ     .+4
003354  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
```

```
                                ;*****************************************************************
                                ;TEST 45   ASH     137777 SHIFTED BY 15. = 100000  PS = 13
                                ;*****************************************************************

003356  010701                          SCOPE
003360  012700  137777          MOV     #137777,%0      ;LOAD R0 WITH 137777
003364  072027  000017          ASH     #15.,%0         ;SHIFT R0 BY 15.
003370  013767  177776  010242  MOV     @#PS,PSW        ;SAVE PS
003376  122767  000013  010234  CMPB    #13,PSW         ;IS THE PS 13?
003404  001401                  BEQ     .+4
003406  000000                  HLT                     ;THE PS IS NOT EQUAL TO 13
003410  022700  100000          CMP     #100000,%0      ;IS THE RESULT 100000?
003414  001401                  BEQ     .+4
003416  000000                  HLT                     ;R0 IS NOT EQUAL TO 100000


                                ;*****************************************************************
                                ;TEST 46   ASH     125252 SHIFTED BY 1 = 52524  PS = 3
                                ;*****************************************************************

003420  010701                          SCOPE
003422  012700  125252          MOV     #125252,%0      ;LOAD R0 WITH 125252
003426  072027  000001          ASH     #1,%0           ;SHIFT R0 BY 1
003432  013767  177776  010200  MOV     @#PS,PSW        ;SAVE PS
003440  122767  000003  010172  CMPB    #3,PSW          ;IS THE PS 3?
003446  001401                  BEQ     .+4
003450  000000                  HLT                     ;THE PS IS NOT EQUAL TO 3
003452  022700  052524          CMP     #52524,%0       ;IS THE RESULT 52524?
003456  001401                  BEQ     .+4
003460  000000                  HLT                     ;R0 IS NOT EQUAL TO 52524


                                ;*****************************************************************
                                ;TEST 47   ASH     125252 SHIFTED BY -1 = 152525  PS = 10
                                ;*****************************************************************

003462  010701                          SCOPE
003464  012700  125252          MOV     #125252,%0      ;LOAD R0 WITH 125252
003470  072027  177777          ASH     #-1,%0          ;SHIFT R0 BY -1
003474  013767  177776  010136  MOV     @#PS,PSW        ;SAVE PS
003502  122767  000010  010130  CMPB    #10,PSW         ;IS THE PS 10?
003510  001401                  BEQ     .+4
003512  000000                  HLT                     ;THE PS IS NOT EQUAL TO 10
003514  022700  152525          CMP     #152525,%0      ;IS THE RESULT 152525?
003520  001401                  BEQ     .+4
003522  000000                  HLT                     ;R0 IS NOT EQUAL TO 152525
```

```
                        ;*****************************************************************
                        ;TEST 50   ASH     125252 SHIFTED BY -2 = 165252  PS = 11
                        ;*****************************************************************

003524  010701                          SCOPE
003526  012700  125252                  MOV     #125252,%0      ;LOAD R0 WITH 125252
003532  072027  177776                  ASH     #-2,%0          ;SHIFT R0 BY -2
003536  013767  177776  010074          MOV     @#PS,PSW        ;SAVE PS
003544  122767  000011  010066          CMPB    #11,PSW         ;IS THE PS 11?
003552  001401                          BEQ     .+4
003554  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
003556  022700  165252                  CMP     #165252,%0      ;IS THE RESULT 165252?
003562  001401                          BEQ     .+4
003564  000000                          HLT                     ;R0 IS NOT EQUAL TO 165252


                        ;*****************************************************************
                        ;TEST 51   ASH     40000 SHIFTED BY 177762 = 1  PS = 0
                        ;*****************************************************************

003566  010701                          SCOPE
003570  012701  040000                  MOV     #40000,%1       ;LOAD R1 WITH 40000
003574  072127  177762                  ASH     #177762,%1      ;SHIFT R1 BY 177762
003600  013767  177776  010032          MOV     @#PS,PSW        ;SAVE PS
003606  122767  000000  010024          CMPB    #0,PSW          ;IS THE PS 0?
003614  001401                          BEQ     .+4
003616  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
003620  022701  000001                  CMP     #1,%1           ;IS THE RESULT 1?
003624  001401                          BEQ     .+4
003626  000000                          HLT                     ;R1 IS NOT EQUAL TO 1


                        ;*****************************************************************
                        ;TEST 52   ASH     40000 SHIFTED BY 177763 = 2  PS = 0
                        ;*****************************************************************

003630  010701                          SCOPE
003632  012701  040000                  MOV     #40000,%1       ;LOAD R1 WITH 40000
003636  072127  177763                  ASH     #177763,%1      ;SHIFT R1 BY 177763
003642  013767  177776  007770          MOV     @#PS,PSW        ;SAVE PS
003650  122767  000000  007762          CMPB    #0,PSW          ;IS THE PS 0?
003656  001401                          BEQ     .+4
003660  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
003662  022701  000002                  CMP     #2,%1           ;IS THE RESULT 2?
003666  001401                          BEQ     .+4
003670  000000                          HLT                     ;R1 IS NOT EQUAL TO 2
```

```
                                        ;*****************************************************************
                                        ;TEST 53   ASH     40000 SHIFTED BY 177764 = 4  PS = 0
                                        ;*****************************************************************

003672  010701                          SCOPE
003674  012701  040000                  MOV     #40000,%1       ;LOAD R1 WITH 40000
003700  072127  177764                  ASH     #177764,%1      ;SHIFT R1 BY 177764
003704  013767  177776  007726          MOV     @#PS,PSW        ;SAVE PS
003712  122767  000000  007720          CMPB    #0,PSW          ;IS THE PS 0?
003720  001401                          BEQ     .+4
003722  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
003724  022701  000004                  CMP     #4,%1           ;IS THE RESULT 4?
003730  001401                          BEQ     .+4
003732  000000                          HLT                     ;R1 IS NOT EQUAL TO 4


                                        ;*****************************************************************
                                        ;TEST 54   ASH     40000 SHIFTED BY 177765 = 10  PS = 0
                                        ;*****************************************************************

003734  010701                          SCOPE
003736  012701  040000                  MOV     #40000,%1       ;LOAD R1 WITH 40000
003742  072127  177765                  ASH     #177765,%1      ;SHIFT R1 BY 177765
003746  013767  177776  007664          MOV     @#PS,PSW        ;SAVE PS
003754  122767  000000  007656          CMPB    #0,PSW          ;IS THE PS 0?
003762  001401                          BEQ     .+4
003764  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
003766  022701  000010                  CMP     #10,%1          ;IS THE RESULT 10?
003772  001401                          BEQ     .+4
003774  000000                          HLT                     ;R1 IS NOT EQUAL TO 10


                                        ;*****************************************************************
                                        ;TEST 55   ASH     40000 SHIFTED BY 177766 = 20  PS = 0
                                        ;*****************************************************************

003776  010701                          SCOPE
004000  012701  040000                  MOV     #40000,%1       ;LOAD R1 WITH 40000
004004  072127  177766                  ASH     #177766,%1      ;SHIFT R1 BY 177766
004010  013767  177776  007622          MOV     @#PS,PSW        ;SAVE PS
004016  122767  000000  007614          CMPB    #0,PSW          ;IS THE PS 0?
004024  001401                          BEQ     .+4
004026  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
004030  022701  000020                  CMP     #20,%1          ;IS THE RESULT 20?
004034  001401                          BEQ     .+4
004036  000000                          HLT                     ;R1 IS NOT EQUAL TO 20
```

```
                                ;*****************************************************************
                                ;TEST 56   ASH     40000 SHIFTED BY 177767 = 40  PS = 0
                                ;*****************************************************************

004040  010701                          SCOPE
004042  012701  040000                  MOV     #40000,%1       ;LOAD R1 WITH 40000
004046  072127  177767                  ASH     #177767,%1      ;SHIFT R1 BY 177767
004052  013767  177776  007560          MOV     @#PS,PSW        ;SAVE PS
004060  122767  000000  007552          CMPB    #0,PSW          ;IS THE PS 0?
004066  001401                          BEQ     .+4
004070  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
004072  022701  000040                  CMP     #40,%1          ;IS THE RESULT 40?
004076  001401                          BEQ     .+4
004100  000000                          HLT                     ;R1 IS NOT EQUAL TO 40


                                ;*****************************************************************
                                ;TEST 57   ASH     40000 SHIFTED BY 177770 = 100  PS = 0
                                ;*****************************************************************

004102  010701                          SCOPE
004104  012701  040000                  MOV     #40000,%1       ;LOAD R1 WITH 40000
004110  072127  177770                  ASH     #177770,%1      ;SHIFT R1 BY 177770
004114  013767  177776  007516          MOV     @#PS,PSW        ;SAVE PS
004122  122767  000000  007510          CMPB    #0,PSW          ;IS THE PS 0?
004130  001401                          BEQ     .+4
004132  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
004134  022701  000100                  CMP     #100,%1         ;IS THE RESULT 100?
004140  001401                          BEQ     .+4
004142  000000                          HLT                     ;R1 IS NOT EQUAL TO 100


                                ;*****************************************************************
                                ;TEST 60   ASH     40000 SHIFTED BY 177771 = 200  PS = 0
                                ;*****************************************************************

004144  010701                          SCOPE
004146  012701  040000                  MOV     #40000,%1       ;LOAD R1 WITH 40000
004152  072127  177771                  ASH     #177771,%1      ;SHIFT R1 BY 177771
004156  013767  177776  007454          MOV     @#PS,PSW        ;SAVE PS
004164  122767  000000  007446          CMPB    #0,PSW          ;IS THE PS 0?
004172  001401                          BEQ     .+4
004174  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
004176  022701  000200                  CMP     #200,%1         ;IS THE RESULT 200?
004202  001401                          BEQ     .+4
004204  000000                          HLT                     ;R1 IS NOT EQUAL TO 200
```

```
                                ;*****************************************************************
                                ;TEST 61   ASH     40000 SHIFTED BY 177772 = 400  PS = 0
                                ;*****************************************************************

004206  010701                          SCOPE
004210  012701  040000                  MOV     #40000,%1       ;LOAD R1 WITH 40000
004214  072127  177772                  ASH     #177772,%1      ;SHIFT R1 BY 177772
004220  013767  177776  007412          MOV     @#PS,PSW        ;SAVE PS
004226  122767  000000  007404          CMPB    #0,PSW          ;IS THE PS 0?
004234  001401                          BEQ     .+4
004236  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
004240  022701  000400                  CMP     #400,%1         ;IS THE RESULT 400?
004244  001401                          BEQ     .+4
004246  000000                          HLT                     ;R1 IS NOT EQUAL TO 400


                                ;*****************************************************************
                                ;TEST 62   ASH     40000 SHIFTED BY 177773 = 1000  PS = 0
                                ;*****************************************************************

004250  010701                          SCOPE
004252  012701  040000                  MOV     #40000,%1       ;LOAD R1 WITH 40000
004256  072127  177773                  ASH     #177773,%1      ;SHIFT R1 BY 177773
004262  013767  177776  007350          MOV     @#PS,PSW        ;SAVE PS
004270  122767  000000  007342          CMPB    #0,PSW          ;IS THE PS 0?
004276  001401                          BEQ     .+4
004300  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
004302  022701  001000                  CMP     #1000,%1        ;IS THE RESULT 1000?
004306  001401                          BEQ     .+4
004310  000000                          HLT                     ;R1 IS NOT EQUAL TO 1000


                                ;*****************************************************************
                                ;TEST 63   ASH     40000 SHIFTED BY 177774 = 2000  PS = 0
                                ;*****************************************************************

004312  010701                          SCOPE
004314  012701  040000                  MOV     #40000,%1       ;LOAD R1 WITH 40000
004320  072127  177774                  ASH     #177774,%1      ;SHIFT R1 BY 177774
004324  013767  177776  007306          MOV     @#PS,PSW        ;SAVE PS
004332  122767  000000  007300          CMPB    #0,PSW          ;IS THE PS 0?
004340  001401                          BEQ     .+4
004342  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
004344  022701  002000                  CMP     #2000,%1        ;IS THE RESULT 2000?
004350  001401                          BEQ     .+4
004352  000000                          HLT                     ;R1 IS NOT EQUAL TO 2000
```

```
                                ;*****************************************************************
                                ;TEST 64    ASH      40000 SHIFTED BY 177775 = 4000  PS = 2
                                ;*****************************************************************

004354  010701                          SCOPE
004356  012701  040000                  MOV     #40000,%1       ;LOAD R1 WITH 40000
004362  072127  177775                  ASH     #177775,%1      ;SHIFT R1 BY 177775
004366  013767  177776  007244          MOV     @#PS,PSW        ;SAVE PS
004374  122767  000000  007236          CMPB    #0,PSW          ;IS THE PS 0?
004402  001401                          BEQ     .+4
004404  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
004406  022701  004000                  CMP     #4000,%1        ;IS THE RESULT 4000?
004412  001401                          BEQ     .+4
004414  000000                          HLT                     ;R1 IS NOT EQUAL TO 4000


                                ;*****************************************************************
                                ;TEST 65    ASH      40000 SHIFTED BY 177776 = 10000  PS = 0
                                ;*****************************************************************

004416  010701                          SCOPE
004420  012701  040000                  MOV     #40000,%1       ;LOAD R1 WITH 40000
004424  072127  177776                  ASH     #177776,%1      ;SHIFT R1 BY 177776
004430  013767  177776  007202          MOV     @#PS,PSW        ;SAVE PS
004436  122767  000000  007174          CMPB    #0,PSW          ;IS THE PS 0?
004444  001401                          BEQ     .+4
004446  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
004450  022701  010000                  CMP     #10000,%1       ;IS THE RESULT 10000?
004454  001401                          BEQ     .+4
004456  000000                          HLT                     ;R1 IS NOT EQUAL TO 10000


                                ;*****************************************************************
                                ;TEST 66    ASH      40000 SHIFTED BY 177777 = 20000  PS = 0
                                ;*****************************************************************

004460  010701                          SCOPE
004462  012701  040000                  MOV     #40000,%1       ;LOAD R1 WITH 40000
004466  072127  177777                  ASH     #177777,%1      ;SHIFT R1 BY 177777
004472  013767  177776  007140          MOV     @#PS,PSW        ;SAVE PS
004500  122767  000000  007132          CMPB    #0,PSW          ;IS THE PS 0?
004506  001401                          BEQ     .+4
004510  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
004512  022701  020000                  CMP     #20000,%1       ;IS THE RESULT 20000?
004516  001401                          BEQ     .+4
004520  000000                          HLT                     ;R1 IS NOT EQUAL TO 20000
```

```
                                ;*****************************************************************
                                ;TEST 67   ASH     40000 SHIFTED BY 0 = 40000  PS = 0
                                ;*****************************************************************

004522  010701                          SCOPE
004524  012701  040000                  MOV     #40000,%1       ;LOAD R1 WITH 40000
004530  072127  000000                  ASH     #0,%1           ;SHIFT R1 BY 0
004534  013767  177776  007076          MOV     @#PS,PSW        ;SAVE PS
004542  122767  000000  007070          CMPB    #0,PSW          ;IS THE PS 0?
004550  001401                          BEQ     .+4
004552  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
004554  022701  040000                  CMP     #40000,%1       ;IS THE RESULT 40000?
004560  001401                          BEQ     .+4
004562  000000                          HLT                     ;R1 IS NOT EQUAL TO 40000


                                ;*****************************************************************
                                ;TEST 70   ASH     100000 SHIFTED BY -15. = -1  PS = 10
                                ;*****************************************************************

004564  010701                          SCOPE
004566  012701  100000                  MOV     #100000,%1      ;LOAD R1 WITH 100000
004572  072127  177761                  ASH     #-15.,%1        ;SHIFT R1 BY -15.
004576  013767  177776  007034          MOV     @#PS,PSW        ;SAVE PS
004604  122767  000010  007026          CMPB    #10,PSW         ;IS THE PS 10?
004612  001401                          BEQ     .+4
004614  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
004616  022701  177777                  CMP     #-1,%1          ;IS THE RESULT -1?
004622  001401                          BEQ     .+4
004624  000000                          HLT                     ;R1 IS NOT EQUAL TO -1


                                ;*****************************************************************
                                ;TEST 71   ASH     -1 SHIFTED BY 15. = 100000  PS = 11
                                ;*****************************************************************

004626  010701                          SCOPE
004630  012701  177777                  MOV     #-1,%1          ;LOAD R1 WITH -1
004634  072127  000017                  ASH     #15.,%1         ;SHIFT R1 BY 15.
004640  013767  177776  006772          MOV     @#PS,PSW        ;SAVE PS
004646  122767  000011  006764          CMPB    #11,PSW         ;IS THE PS 11?
004654  001401                          BEQ     .+4
004656  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
004660  022701  100000                  CMP     #100000,%1      ;IS THE RESULT 100000?
004664  001401                          BEQ     .+4
004666  000000                          HLT                     ;R1 IS NOT EQUAL TO 100000
```

```
                                        ;*****************************************************************
                                        ;TEST 72   ASH     =1 SHIFTED BY 16. = 0  PS = 7
                                        ;*****************************************************************

004670  010701                                SCOPE
004672  012701  177777                        MOV     #-1,%1          ;LOAD R1 WITH -1
004676  072127  000020                        ASH     #16.,%1         ;SHIFT R1 BY 16.
004702  013767  177776  006730                MOV     @#PS,PSW        ;SAVE PS
004710  122767  000007  006722                CMPB    #7,PSW          ;IS THE PS 7?
004716  001401                                BEQ     .+4
004720  000000                                HLT                     ;THE PS IS NOT EQUAL TO 7
004722  022701  000000                        CMP     #0,%1           ;IS THE RESULT 0?
004726  001401                                BEQ     .+4
004730  000000                                HLT                     ;R1 IS NOT EQUAL TO 0


                                        ;*****************************************************************
                                        ;TEST 73   ASH     137777 SHIFTED BY 15. = 100000  PS = 13
                                        ;*****************************************************************

004732  010701                                SCOPE
004734  012701  137777                        MOV     #137777,%1      ;LOAD R1 WITH 137777
004740  072127  000017                        ASH     #15.,%1         ;SHIFT R1 BY 15.
004744  013767  177776  006666                MOV     @#PS,PSW        ;SAVE PS
004752  122767  000013  006660                CMPB    #13,PSW         ;IS THE PS 13?
004760  001401                                BEQ     .+4
004762  000000                                HLT                     ;THE PS IS NOT EQUAL TO 13
004764  022701  100000                        CMP     #100000,%1      ;IS THE RESULT 100000?
004770  001401                                BEQ     .+4
004772  000000                                HLT                     ;R1 IS NOT EQUAL TO 100000


                                        ;*****************************************************************
                                        ;TEST 74   ASH     125252 SHIFTED BY 1 = 52524  PS = 3
                                        ;*****************************************************************

004774  010701                                SCOPE
004776  012701  125252                        MOV     #125252,%1      ;LOAD R1 WITH 125252
005002  072127  000001                        ASH     #1,%1           ;SHIFT R1 BY 1
005006  013767  177776  006624                MOV     @#PS,PSW        ;SAVE PS
005014  122767  000003  006616                CMPB    #3,PSW          ;IS THE PS 3?
005022  001401                                BEQ     .+4
005024  000000                                HLT                     ;THE PS IS NOT EQUAL TO 3
005026  022701  052524                        CMP     #52524,%1       ;IS THE RESULT 52524?
005032  001401                                BEQ     .+4
005034  000000                                HLT                     ;R1 IS NOT EQUAL TO 52524
```

```
                                ;*****************************************************************
                                ;TEST 75   ASH     125252 SHIFTED BY -1 = 152525  PS = 10
                                ;*****************************************************************

005036  010701                          SCOPE
005040  012701  125252                  MOV     #125252,%1      ;LOAD R1 WITH 125252
005044  072127  177777                  ASH     #-1,%1          ;SHIFT R1 BY -1
005050  013767  177776  006562          MOV     @#PS,PSW        ;SAVE PS
005056  122767  000010  006554          CMPB    #10,PSW         ;IS THE PS 10?
005064  001401                          BEQ     .+4
005066  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
005070  022701  152525                  CMP     #152525,%1      ;IS THE RESULT 152525?
005074  001401                          BEQ     .+4
005076  000000                          HLT                     ;R1 IS NOT EQUAL TO 152525


                                ;*****************************************************************
                                ;TEST 76   ASH     125252 SHIFTED BY -2 = 165252  PS = 11
                                ;*****************************************************************

005100  010701                          SCOPE
005102  012701  125252                  MOV     #125252,%1      ;LOAD R1 WITH 125252
005106  072127  177776                  ASH     #-2,%1          ;SHIFT R1 BY -2
005112  013767  177776  006520          MOV     @#PS,PSW        ;SAVE PS
005120  122767  000011  006512          CMPB    #11;PSW         ;IS THE PS 11?
005126  001401                          BEQ     .+4
005130  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
005132  022701  165252                  CMP     #165252,%1      ;IS THE RESULT 165252?
005136  001401                          BEQ     .+4
005140  000000                          HLT                     ;R1 IS NOT EQUAL TO 165252


                                ;*****************************************************************
                                ;TEST 77   ASH     40000 SHIFTED BY 177762 = 1  PS = 0
                                ;*****************************************************************

005142  010701                          SCOPE
005144  012702  040000                  MOV     #40000,%2       ;LOAD R2 WITH 40000
005150  072227  177762                  ASH     #177762,%2      ;SHIFT R2 BY 177762
005154  013767  177776  006456          MOV     @#PS,PSW        ;SAVE PS
005162  122767  000000  006450          CMPB    #0,PSW          ;IS THE PS 0?
005170  001401                          BEQ     .+4
005172  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
005174  022702  000001                  CMP     #1,%2           ;IS THE RESULT 1?
005200  001401                          BEQ     .+4
005202  000000                          HLT                     ;R2 IS NOT EQUAL TO 1
```

```
                                ;*****************************************************************
                                ;TEST 100   ASH     40000 SHIFTED BY 177763 = 2  PS = 0
                                ;*****************************************************************

005204  010701                          SCOPE
005206  012702  040000                  MOV     #40000,%2       ;LOAD R2 WITH 40000
005212  072227  177763                  ASH     #177763,%2      ;SHIFT R2 BY 177763
005216  013767  177776  006414          MOV     @#PS,PSW        ;SAVE PS
005224  122767  000000  006406          CMPB    #0,PSW          ;IS THE PS 0?
005232  001401                          BEQ     .+4
005234  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
005236  022702  000002                  CMP     #2,%2           ;IS THE RESULT 2?
005242  001401                          BEQ     .+4
005244  000000                          HLT                     ;R2 IS NOT EQUAL TO 2


                                ;*****************************************************************
                                ;TEST 101   ASH     40000 SHIFTED BY 177764 = 4  PS = 0
                                ;*****************************************************************

005246  010701                          SCOPE
005250  012702  040000                  MOV     #40000,%2       ;LOAD R2 WITH 40000
005254  072227  177764                  ASH     #177764,%2      ;SHIFT R2 BY 177764
005260  013767  177776  006352          MOV     @#PS,PSW        ;SAVE PS
005266  122767  000000  006344          CMPB    #0,PSW          ;IS THE PS 0?
005274  001401                          BEQ     .+4
005276  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
005300  022702  000004                  CMP     #4,%2           ;IS THE RESULT 4?
005304  001401                          BEQ     .+4
005306  000000                          HLT                     ;R2 IS NOT EQUAL TO 4


                                ;*****************************************************************
                                ;TEST 102   ASH     40000 SHIFTED BY 177765 = 10  PS = 0
                                ;*****************************************************************

005310  010701                          SCOPE
005312  012702  040000                  MOV     #40000,%2       ;LOAD R2 WITH 40000
005316  072227  177765                  ASH     #177765,%2      ;SHIFT R2 BY 177765
005322  013767  177776  006310          MOV     @#PS,PSW        ;SAVE PS
005330  122767  000000  006302          CMPB    #0,PSW          ;IS THE PS 0?
005336  001401                          BEQ     .+4
005340  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
005342  022702  000010                  CMP     #10,%2          ;IS THE RESULT 10?
005346  001401                          BEQ     .+4
005350  000000                          HLT                     ;R2 IS NOT EQUAL TO 10
```

```
                                ;*****************************************************************
                                ;TEST 103   ASH     40000 SHIFTED BY 177766 = 20  PS = 0
                                ;*****************************************************************

005352  010701                          SCOPE
005354  012702  040000                  MOV     #40000,%2       ;LOAD R2 WITH 40000
005360  072227  177766                  ASH     #177766,%2      ;SHIFT R2 BY 177766
005364  013767  177776  006246          MOV     @#PS,PSW        ;SAVE PS
005372  122767  000000  006240          CMPB    #0,PSW          ;IS THE PS 0?
005400  001401                          BEQ     .+4
005402  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
005404  022702  000020                  CMP     #20,%2          ;IS THE RESULT 20?
005410  001401                          BEQ     .+4
005412  000000                          HLT                     ;R2 IS NOT EQUAL TO 20


                                ;*****************************************************************
                                ;TEST 104   ASH     40000 SHIFTED BY 177767 = 40  PS = 0
                                ;*****************************************************************

005414  010701                          SCOPE
005416  012702  040000                  MOV     #40000,%2       ;LOAD R2 WITH 40000
005422  072227  177767                  ASH     #177767,%2      ;SHIFT R2 BY 177767
005426  013767  177776  006204          MOV     @#PS,PSW        ;SAVE PS
005434  122767  000000  006176          CMPB    #0,PSW          ;IS THE PS 0?
005442  001401                          BEQ     .+4
005444  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
005446  022702  000040                  CMP     #40,%2          ;IS THE RESULT 40?
005452  001401                          BEQ     .+4
005454  000000                          HLT                     ;R2 IS NOT EQUAL TO 40


                                ;*****************************************************************
                                ;TEST 105   ASH     40000 SHIFTED BY 177770 = 100  PS = 0
                                ;*****************************************************************

005456  010701                          SCOPE
005460  012702  040000                  MOV     #40000,%2       ;LOAD R2 WITH 40000
005464  072227  177770                  ASH     #177770,%2      ;SHIFT R2 BY 177770
005470  013767  177776  006142          MOV     @#PS,PSW        ;SAVE PS
005476  122767  000000  006134          CMPB    #0,PSW          ;IS THE PS 0?
005504  001401                          BEQ     .+4
005506  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
005510  022702  000100                  CMP     #100,%2         ;IS THE RESULT 100?
005514  001401                          BEQ     .+4
005516  000000                          HLT                     ;R2 IS NOT EQUAL TO 100
```

```
                                ;*****************************************************************
                                ;TEST 106   ASH     40000 SHIFTED BY 177771 = 200  PS = 0
                                ;*****************************************************************

005520  010701                          SCOPE
005522  012702  040000                  MOV     #40000,%2       ;LOAD R2 WITH 40000
005526  072227  177771                  ASH     #177771,%2      ;SHIFT R2 BY 177771
005532  013767  177776  006100          MOV     @#PS,PSW        ;SAVE PS
005540  122767  000000  006072          CMPB    #0,PSW          ;IS THE PS 0?
005546  001401                          BEQ     .+4
005550  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
005552  022702  000200                  CMP     #200,%2         ;IS THE RESULT 200?
005556  001401                          BEQ     .+4
005560  000000                          HLT                     ;R2 IS NOT EQUAL TO 200


                                ;*****************************************************************
                                ;TEST 107   ASH     40000 SHIFTED BY 177772 = 400  PS = 0
                                ;*****************************************************************

005562  010701                          SCOPE
005564  012702  040000                  MOV     #40000,%2       ;LOAD R2 WITH 40000
005570  072227  177772                  ASH     #177772,%2      ;SHIFT R2 BY 177772
005574  013767  177776  006036          MOV     @#PS,PSW        ;SAVE PS
005602  122767  000000  006030          CMPB    #0,PSW          ;IS THE PS 0?
005610  001401                          BEQ     .+4
005612  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
005614  022702  000400                  CMP     #400,%2         ;IS THE RESULT 400?
005620  001401                          BEQ     .+4
005622  000000                          HLT                     ;R2 IS NOT EQUAL TO 400


                                ;*****************************************************************
                                ;TEST 110   ASH     40000 SHIFTED BY 177773 = 1000  PS = 0
                                ;*****************************************************************

005624  010701                          SCOPE
005626  012702  040000                  MOV     #40000,%2       ;LOAD R2 WITH 40000
005632  072227  177773                  ASH     #177773,%2      ;SHIFT R2 BY 177773
005636  013767  177776  005774          MOV     @#PS,PSW        ;SAVE PS
005644  122767  000000  005766          CMPB    #0,PSW          ;IS THE PS 0?
005652  001401                          BEQ     .+4
005654  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
005656  022702  001000                  CMP     #1000,%2        ;IS THE RESULT 1000?
005662  001401                          BEQ     .+4
005664  000000                          HLT                     ;R2 IS NOT EQUAL TO 1000
```

```
                                ;*****************************************************************
                                ;TEST 111   ASH     40000 SHIFTED BY 177774 = 2000  PS = 0
                                ;*****************************************************************

005666  010701                          SCOPE
005670  012702  040000                  MOV     #40000,%2       ;LOAD R2 WITH 40000
005674  072227  177774                  ASH     #177774,%2      ;SHIFT R2 BY 177774
005700  013767  177776  005732          MOV     @#PS,PSW        ;SAVE PS
005706  122767  000000  005724          CMPB    #0,PSW          ;IS THE PS 0?
005714  001401                          BEQ     .+4
005716  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
005720  022702  002000                  CMP     #2000,%2        ;IS THE RESULT 2000?
005724  001401                          BEQ     .+4
005726  000000                          HLT                     ;R2 IS NOT EQUAL TO 2000


                                ;*****************************************************************
                                ;TEST 112   ASH     40000 SHIFTED BY 177775 = 4000  PS = 0
                                ;*****************************************************************

005730  010701                          SCOPE
005732  012702  040000                  MOV     #40000,%2       ;LOAD R2 WITH 40000
005736  072227  177775                  ASH     #177775,%2      ;SHIFT R2 BY 177775
005742  013767  177776  005670          MOV     @#PS,PSW        ;SAVE PS
005750  122767  000000  005662          CMPB    #0,PSW          ;IS THE PS 0?
005756  001401                          BEQ     .+4
005760  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
005762  022702  004000                  CMP     #4000,%2        ;IS THE RESULT 4000?
005766  001401                          BEQ     .+4
005770  000000                          HLT                     ;R2 IS NOT EQUAL TO 4000


                                ;*****************************************************************
                                ;TEST 113   ASH     40000 SHIFTED BY 177776 = 10000  PS = 0
                                ;*****************************************************************

005772  010701                          SCOPE
005774  012702  040000                  MOV     #40000,%2       ;LOAD R2 WITH 40000
006000  072227  177776                  ASH     #177776,%2      ;SHIFT R2 BY 177776
006004  013767  177776  005626          MOV     @#PS,PSW        ;SAVE PS
006012  122767  000000  005620          CMPB    #0,PSW          ;IS THE PS 0?
006020  001401                          BEQ     .+4
006022  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
006024  022702  010000                  CMP     #10000,%2       ;IS THE RESULT 10000?
006030  001401                          BEQ     .+4
006032  000000                          HLT                     ;R2 IS NOT EQUAL TO 10000
```

```
                                ;*****************************************************************
                                ;TEST 114   ASH     40000 SHIFTED BY 177777 = 20000  PS = 0
                                ;*****************************************************************

006034  010701                          SCOPE
006036  012702  040000                  MOV     #40000,%2       ;LOAD R2 WITH 40000
006042  072227  177777                  ASH     #177777,%2      ;SHIFT R2 BY 177777
006046  013767  177776  005564          MOV     @#PS,PSW        ;SAVE PS
006054  122767  000000  005556          CMPB    #0,PSW          ;IS THE PS 0?
006062  001401                          BEQ     .+4
006064  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
006066  022702  020000                  CMP     #20000,%2       ;IS THE RESULT 20000?
006072  001401                          BEQ     .+4
006074  000000                          HLT                     ;R2 IS NOT EQUAL TO 20000


                                ;*****************************************************************
                                ;TEST 115   ASH     40000 SHIFTED BY 0 = 40000  PS = 0
                                ;*****************************************************************

006076  010701                          SCOPE
006100  012702  040000                  MOV     #40000,%2       ;LOAD R2 WITH 40000
006104  072227  000000                  ASH     #0,%2           ;SHIFT R2 BY 0
006110  013767  177776  005522          MOV     @#PS,PSW        ;SAVE PS
006116  122767  000000  005514          CMPB    #0,PSW          ;IS THE PS 0?
006124  001401                          BEQ     .+4
006126  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
006130  022702  040000                  CMP     #40000,%2       ;IS THE RESULT 40000?
006134  001401                          BEQ     .+4
006136  000000                          HLT                     ;R2 IS NOT EQUAL TO 40000


                                ;*****************************************************************
                                ;TEST 116   ASH     100000 SHIFTED BY -15. = -1  PS = 10
                                ;*****************************************************************

006140  010701                          SCOPE
006142  012702  100000                  MOV     #100000,%2      ;LOAD R2 WITH 100000
006146  072227  177761                  ASH     #-15.,%2        ;SHIFT R2 BY -15.
006152  013767  177776  005460          MOV     @#PS,PSW        ;SAVE PS
006160  122767  000010  005452          CMPB    #10,PSW         ;IS THE PS 10?
006166  001401                          BEQ     .+4
006170  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
006172  022702  177777                  CMP     #-1,%2          ;IS THE RESULT -1?
006176  001401                          BEQ     .+4
006200  000000                          HLT                     ;R2 IS NOT EQUAL TO -1
```

```
                                ;*****************************************************************
                                ;TEST 117   ASH     -1 SHIFTED BY 15. = 100000  PS = 11
                                ;*****************************************************************

006202  010701                          SCOPE
006204  012702  177777                  MOV     #-1,%2          ;LOAD R2 WITH -1
006210  072227  000017                  ASH     #15.,%2         ;SHIFT R2 BY 15.
006214  013767  177776  005416          MOV     @#PS,PSW        ;SAVE PS
006222  122767  000011  005410          CMPB    #11,PSW         ;IS THE PS 11?
006230  001401                          BEQ     .+4
006232  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
006234  022702  100000                  CMP     #100000,%2      ;IS THE RESULT 100000?
006240  001401                          BEQ     .+4
006242  000000                          HLT                     ;R2 IS NOT EQUAL TO 100000


                                ;*****************************************************************
                                ;TEST 120   ASH     -1 SHIFTED BY 16. = 0  PS = 7
                                ;*****************************************************************

006244  010701                          SCOPE
006246  012702  177777                  MOV     #-1,%2          ;LOAD R2 WITH -1
006252  072227  000020                  ASH     #16.,%2         ;SHIFT R2 BY 16.
006256  013767  177776  005354          MOV     @#PS,PSW        ;SAVE PS
006264  122767  000007  005346          CMPB    #7,PSW          ;IS THE PS 7?
006272  001401                          BEQ     .+4
006274  000000                          HLT                     ;THE PS IS NOT EQUAL TO 7
006276  022702  000000                  CMP     #0,%2           ;IS THE RESULT 0?
006302  001401                          BEQ     .+4
006304  000000                          HLT                     ;R2 IS NOT EQUAL TO 0


                                ;*****************************************************************
                                ;TEST 121   ASH     137777 SHIFTED BY 15. = 100000  PS = 13
                                ;*****************************************************************

006306  010701                          SCOPE
006310  012702  137777                  MOV     #137777,%2      ;LOAD R2 WITH 137777
006314  072227  000017                  ASH     #15.,%2         ;SHIFT R2 BY 15.
006320  013767  177776  005312          MOV     @#PS,PSW        ;SAVE PS
006326  122767  000013  005304          CMPB    #13,PSW         ;IS THE PS 13?
006334  001401                          BEQ     .+4
006336  000000                          HLT                     ;THE PS IS NOT EQUAL TO 13
006340  022702  100000                  CMP     #100000,%2      ;IS THE RESULT 100000?
006344  001401                          BEQ     .+4
006346  000000                          HLT                     ;R2 IS NOT EQUAL TO 100000
```

```
                                ;*****************************************************************
                                ;TEST 122   ASH     125252 SHIFTED BY 1 = 52524  PS = 3
                                ;*****************************************************************

006350  010701                          SCOPE
006352  012702  125252                  MOV     #125252,%2      ;LOAD R2 WITH 125252
006356  072227  000001                  ASH     #1,%2           ;SHIFT R2 BY 1
006362  013767  177776  005250          MOV     @#PS,PSW        ;SAVE PS
006370  122767  000003  005242          CMPB    #3,PSW          ;IS THE PS 3?
006376  001401                          BEQ     .+4
006400  000000                          HLT                     ;THE PS IS NOT EQUAL TO 3
006402  022702  052524                  CMP     #52524,%2       ;IS THE RESULT 52524?
006406  001401                          BEQ     .+4
006410  000000                          HLT                     ;R2 IS NOT EQUAL TO 52524


                                ;*****************************************************************
                                ;TEST 123   ASH     125252 SHIFTED BY -1 = 152525  PS = 10
                                ;*****************************************************************

006412  010701                          SCOPE
006414  012702  125252                  MOV     #125252,%2      ;LOAD R2 WITH 125252
006420  072227  177777                  ASH     #-1,%2          ;SHIFT R2 BY -1
006424  013767  177776  005206          MOV     @#PS,PSW        ;SAVE PS
006432  122767  000010  005200          CMPB    #10,PSW         ;IS THE PS 10?
006440  001401                          BEQ     .+4
006442  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
006444  022702  152525                  CMP     #152525,%2      ;IS THE RESULT 152525?
006450  001401                          BEQ     .+4
006452  000000                          HLT                     ;R2 IS NOT EQUAL TO 152525


                                ;*****************************************************************
                                ;TEST 124   ASH     125252 SHIFTED BY -2 = 165252  PS = 11
                                ;*****************************************************************

006454  010701                          SCOPE
006456  012702  125252                  MOV     #125252,%2      ;LOAD R2 WITH 125252
006462  072227  177776                  ASH     #-2,%2          ;SHIFT R2 BY -2
006466  013767  177776  005144          MOV     @#PS,PSW        ;SAVE PS
006474  122767  000011  005136          CMPB    #11,PSW         ;IS THE PS 11?
006502  001401                          BEQ     .+4
006504  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
006506  022702  165252                  CMP     #165252,%2      ;IS THE RESULT 165252?
006512  001401                          BEQ     .+4
006514  000000                          HLT                     ;R2 IS NOT EQUAL TO 165252
```

```
                                ;*****************************************************************
                                ;TEST 125   ASH     40000 SHIFTED BY 177762 = 1  PS = 0
                                ;*****************************************************************

006516  010701                          SCOPE
006520  012703  040000                  MOV     #40000,%3       ;LOAD R3 WITH 40000
006524  072327  177762                  ASH     #177762,%3      ;SHIFT R3 BY 177762
006530  013767  177776  005102          MOV     @#PS,PSW        ;SAVE PS
006536  122767  000000  005074          CMPB    #0,PSW          ;IS THE PS 0?
006544  001401                          BEQ     .+4
006546  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
006550  022703  000001                  CMP     #1,%3           ;IS THE RESULT 1?
006554  001401                          BEQ     .+4
006556  000000                          HLT                     ;R3 IS NOT EQUAL TO 1


                                ;*****************************************************************
                                ;TEST 126   ASH     40000 SHIFTED BY 177763 = 2  PS = 0
                                ;*****************************************************************

006560  010701                          SCOPE
006562  012703  040000                  MOV     #40000,%3       ;LOAD R3 WITH 40000
006566  072327  177763                  ASH     #177763,%3      ;SHIFT R3 BY 177763
006572  013767  177776  005040          MOV     @#PS,PSW        ;SAVE PS
006600  122767  000000  005032          CMPB    #0,PSW          ;IS THE PS 0?
006606  001401                          BEQ     .+4
006610  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
006612  022703  000002                  CMP     #2,%3           ;IS THE RESULT 2?
006616  001401                          BEQ     .+4
006620  000000                          HLT                     ;R3 IS NOT EQUAL TO 2


                                ;*****************************************************************
                                ;TEST 127   ASH     40000 SHIFTED BY 177764 = 4  PS = 0
                                ;*****************************************************************

006622  010701                          SCOPE
006624  012703  040000                  MOV     #40000,%3       ;LOAD R3 WITH 40000
006630  072327  177764                  ASH     #177764,%3      ;SHIFT R3 BY 177764
006634  013767  177776  004776          MOV     @#PS,PSW        ;SAVE PS
006642  122767  000000  004770          CMPB    #0,PSW          ;IS THE PS 0?
006650  001401                          BEQ     .+4
006652  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
006654  022703  000004                  CMP     #4,%3           ;IS THE RESULT 4?
006660  001401                          BEQ     .+4
006662  000000                          HLT                     ;R3 IS NOT EQUAL TO 4
```

```
                                ;*****************************************************************
                                ;TEST 130   ASH     40000 SHIFTED BY 177765 = 10  PS = 0
                                ;*****************************************************************

006664  010701                          SCOPE
006666  012703  040000                  MOV     #40000,%3       ;LOAD R3 WITH 40000
006672  072327  177765                  ASH     #177765,%3      ;SHIFT R3 BY 177765
006676  013767  177776  004734          MOV     @#PS,PSW        ;SAVE PS
006704  122767  000000  004726          CMPB    #0,PSW          ;IS THE PS 0?
006712  001401                          BEQ     .+4
006714  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
006716  022703  000010                  CMP     #10,%3          ;IS THE RESULT 10?
006722  001401                          BEQ     .+4
006724  000000                          HLT                     ;R3 IS NOT EQUAL TO 10


                                ;*****************************************************************
                                ;TEST 131   ASH     40000 SHIFTED BY 177766 = 20  PS = 0
                                ;*****************************************************************

006726  010701                          SCOPE
006730  012703  040000                  MOV     #40000,%3       ;LOAD R3 WITH 40000
006734  072327  177766                  ASH     #177766,%3      ;SHIFT R3 BY 177766
006740  013767  177776  004672          MOV     @#PS,PSW        ;SAVE PS
006746  122767  000000  004664          CMPB    #0,PSW          ;IS THE PS 0?
006754  001401                          BEQ     .+4
006756  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
006760  022703  000020                  CMP     #20,%3          ;IS THE RESULT 20?
006764  001401                          BEQ     .+4
006766  000000                          HLT                     ;R3 IS NOT EQUAL TO 20


                                ;*****************************************************************
                                ;TEST 132   ASH     40000 SHIFTED BY 177767 = 40  PS = 0
                                ;*****************************************************************

006770  010701                          SCOPE
006772  012703  040000                  MOV     #40000,%3       ;LOAD R3 WITH 40000
006776  072327  177767                  ASH     #177767,%3      ;SHIFT R3 BY 177767
007002  013767  177776  004630          MOV     @#PS,PSW        ;SAVE PS
007010  122767  000000  004622          CMPB    #0,PSW          ;IS THE PS 0?
007016  001401                          BEQ     .+4
007020  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
007022  022703  000040                  CMP     #40,%3          ;IS THE RESULT 40?
007026  001401                          BEQ     .+4
007030  000000                          HLT                     ;R3 IS NOT EQUAL TO 40
```

```
                                ;*****************************************************************
                                ;TEST 133   ASH     40000 SHIFTED BY 177770 = 100  PS = 0
                                ;*****************************************************************

007032  010701                          SCOPE
007034  012703  040000                  MOV     #40000,%3       ;LOAD R3 WITH 40000
007040  072327  177770                  ASH     #177770,%3      ;SHIFT R3 BY 177770
007044  013767  177776  004566          MOV     @#PS,PSW        ;SAVE PS
007052  122767  000000  004560          CMPB    #0,PSW          ;IS THE PS 0?
007060  001401                          BEQ     .+4
007062  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
007064  022703  000100                  CMP     #100,%3         ;IS THE RESULT 100?
007070  001401                          BEQ     .+4
007072  000000                          HLT                     ;R3 IS NOT EQUAL TO 100


                                ;*****************************************************************
                                ;TEST 134   ASH     40000 SHIFTED BY 177771 = 200  PS = 0
                                ;*****************************************************************

007074  010701                          SCOPE
007076  012703  040000                  MOV     #40000,%3       ;LOAD R3 WITH 40000
007102  072327  177771                  ASH     #177771,%3      ;SHIFT R3 BY 177771
007106  013767  177776  004524          MOV     @#PS,PSW        ;SAVE PS
007114  122767  000000  004516          CMPB    #0,PSW          ;IS THE PS 0?
007122  001401                          BEQ     .+4
007124  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
007126  022703  000200                  CMP     #200,%3         ;IS THE RESULT 200?
007132  001401                          BEQ     .+4
007134  000000                          HLT                     ;R3 IS NOT EQUAL TO 200


                                ;*****************************************************************
                                ;TEST 135   ASH     40000 SHIFTED BY 177772 = 400  PS = 0
                                ;*****************************************************************

007136  010701                          SCOPE
007140  012703  040000                  MOV     #40000,%3       ;LOAD R3 WITH 40000
007144  072327  177772                  ASH     #177772,%3      ;SHIFT R3 BY 177772
007150  013767  177776  004462          MOV     @#PS,PSW        ;SAVE PS
007156  122767  000000  004454          CMPB    #0,PSW          ;IS THE PS 0?
007164  001401                          BEQ     .+4
007166  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
007170  022703  000400                  CMP     #400,%3         ;IS THE RESULT 400?
007174  001401                          BEQ     .+4
007176  000000                          HLT                     ;R3 IS NOT EQUAL TO 400
```

```
                                ;*****************************************************************
                                ;TEST 136   ASH     40000 SHIFTED BY 177773 = 1000  PS = 0
                                ;*****************************************************************

007200  010701                          SCOPE
007202  012703  040000                  MOV     #40000,%3       ;LOAD R3 WITH 40000
007206  072327  177773                  ASH     #177773,%3      ;SHIFT R3 BY 177773
007212  013767  177776  004420          MOV     @#PS,PSW        ;SAVE PS
007220  122767  000000  004412          CMPB    #0,PSW          ;IS THE PS 0?
007226  001401                          BEQ     .+4
007230  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
007232  022703  001000                  CMP     #1000,%3        ;IS THE RESULT 1000?
007236  001401                          BEQ     .+4
007240  000000                          HLT                     ;R3 IS NOT EQUAL TO 1000


                                ;*****************************************************************
                                ;TEST 137   ASH     40000 SHIFTED BY 177774 = 2000  PS = 0
                                ;*****************************************************************

007242  010701                          SCOPE
007244  012703  040000                  MOV     #40000,%3       ;LOAD R3 WITH 40000
007250  072327  177774                  ASH     #177774,%3      ;SHIFT R3 BY 177774
007254  013767  177776  004356          MOV     @#PS,PSW        ;SAVE PS
007262  122767  000000  004350          CMPB    #0,PSW          ;IS THE PS 0?
007270  001401                          BEQ     .+4
007272  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
007274  022703  002000                  CMP     #2000,%3        ;IS THE RESULT 2000?
007300  001401                          BEQ     .+4
007302  000000                          HLT                     ;R3 IS NOT EQUAL TO 2000


                                ;*****************************************************************
                                ;TEST 140   ASH     40000 SHIFTED BY 177775 = 4000  PS = 0
                                ;*****************************************************************

007304  010701                          SCOPE
007306  012703  040000                  MOV     #40000,%3       ;LOAD R3 WITH 40000
007312  072327  177775                  ASH     #177775,%3      ;SHIFT R3 BY 177775
007316  013767  177776  004314          MOV     @#PS,PSW        ;SAVE PS
007324  122767  000000  004306          CMPB    #0,PSW          ;IS THE PS 0?
007332  001401                          BEQ     .+4
007334  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
007336  022703  004000                  CMP     #4000,%3        ;IS THE RESULT 4000?
007342  001401                          BEQ     .+4
007344  000000                          HLT                     ;R3 IS NOT EQUAL TO 4000
```

```
                                ;*****************************************************************
                                ;TEST 141   ASH     40000 SHIFTED BY 177776 = 10000  PS = 0
                                ;*****************************************************************

007346  010701                          SCOPE
007350  012703  040000                  MOV     #40000,%3       ;LOAD R3 WITH 40000
007354  072327  177776                  ASH     #177776,%3      ;SHIFT R3 BY 177776
007360  013767  177776  004252          MOV     @#PS,PSW        ;SAVE PS
007366  122767  000000  004244          CMPB    #0,PSW          ;IS THE PS 0?
007374  001401                          BEQ     .+4
007376  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
007400  022703  010000                  CMP     #10000,%3       ;IS THE RESULT 10000?
007404  001401                          BEQ     .+4
007406  000000                          HLT                     ;R3 IS NOT EQUAL TO 10000


                                ;*****************************************************************
                                ;TEST 142   ASH     40000 SHIFTED BY 177777 = 20000  PS = 0
                                ;*****************************************************************

007410  010701                          SCOPE
007412  012703  040000                  MOV     #40000,%3       ;LOAD R3 WITH 40000
007416  072327  177777                  ASH     #177777,%3      ;SHIFT R3 BY 177777
007422  013767  177776  004210          MOV     @#PS,PSW        ;SAVE PS
007430  122767  000000  004202          CMPB    #0,PSW          ;IS THE PS 0?
007436  001401                          BEQ     .+4
007440  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
007442  022703  020000                  CMP     #20000,%3       ;IS THE RESULT 20000?
007446  001401                          BEQ     .+4
007450  000000                          HLT                     ;R3 IS NOT EQUAL TO 20000


                                ;*****************************************************************
                                ;TEST 143   ASH     40000 SHIFTED BY 0 = 40000  PS = 0
                                ;*****************************************************************

007452  010701                          SCOPE
007454  012703  040000                  MOV     #40000,%3       ;LOAD R3 WITH 40000
007460  072327  000000                  ASH     #0,%3           ;SHIFT R3 BY 0
007464  013767  177776  004146          MOV     @#PS,PSW        ;SAVE PS
007472  122767  000000  004140          CMPB    #0,PSW          ;IS THE PS 0?
007500  001401                          BEQ     .+4
007502  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
007504  022703  040000                  CMP     #40000,%3       ;IS THE RESULT 40000?
007510  001401                          BEQ     .+4
007512  000000                          HLT                     ;R3 IS NOT EQUAL TO 40000
```

```
                                        ;*****************************************************************
                                        ;TEST 144   ASH     100000 SHIFTED BY -15. = -1  PS = 10
                                        ;*****************************************************************

007514  010701                                  SCOPE
007516  012703  100000                          MOV     #100000,%3      ;LOAD R3 WITH 100000
007522  072327  177761                          ASH     #-15.,%3        ;SHIFT R3 BY -15.
007526  013767  177776  004104                  MOV     @#PS,PSW        ;SAVE PS
007534  122767  000010  004076                  CMPB    #10,PSW         ;IS THE PS 10?
007542  001401                                  BEQ     .+4
007544  000000                                  HLT                     ;THE PS IS NOT EQUAL TO 10
007546  022703  177777                          CMP     #-1,%3          ;IS THE RESULT -1?
007552  001401                                  BEQ     .+4
007554  000000                                  HLT                     ;R3 IS NOT EQUAL TO -1


                                        ;*****************************************************************
                                        ;TEST 145   ASH     -1 SHIFTED BY 15. = 100000  PS = 11
                                        ;*****************************************************************

007556  010701                                  SCOPE
007560  012703  177777                          MOV     #-1,%3          ;LOAD R3 WITH -1
007564  072327  000017                          ASH     #15.,%3         ;SHIFT R3 BY 15.
007570  013767  177776  004042                  MOV     @#PS,PSW        ;SAVE PS
007576  122767  000011  004034                  CMPB    #11,PSW         ;IS THE PS 11?
007604  001401                                  BEQ     .+4
007606  000000                                  HLT                     ;THE PS IS NOT EQUAL TO 11
007610  022703  100000                          CMP     #100000,%3      ;IS THE RESULT 100000?
007614  001401                                  BEQ     .+4
007616  000000                                  HLT                     ;R3 IS NOT EQUAL TO 100000


                                        ;*****************************************************************
                                        ;TEST 146   ASH     -1 SHIFTED BY 16. = 0  PS = 7
                                        ;*****************************************************************

007620  010701                                  SCOPE
007622  012703  177777                          MOV     #-1,%3          ;LOAD R3 WITH -1
007626  072327  000020                          ASH     #16.,%3         ;SHIFT R3 BY 16.
007632  013767  177776  004000                  MOV     @#PS,PSW        ;SAVE PS
007640  122767  000007  003772                  CMPB    #7,PSW          ;IS THE PS 7?
007646  001401                                  BEQ     .+4
007650  000000                                  HLT                     ;THE PS IS NOT EQUAL TO 7
007652  022703  000000                          CMP     #0,%3           ;IS THE RESULT 0?
007656  001401                                  BEQ     .+4
007660  000000                                  HLT                     ;R3 IS NOT EQUAL TO 0
```

```
                                ;*****************************************************************
                                ;TEST 147   ASH     137777 SHIFTED BY 15. = 100000  PS = 13
                                ;*****************************************************************

007662  010701                          SCOPE
007664  012703  137777                  MOV     #137777,%3      ;LOAD R3 WITH 137777
007670  072327  000017                  ASH     #15.,%3         ;SHIFT R3 BY 15.
007674  013767  177776  003736          MOV     @#PS,PSW        ;SAVE PS
007702  122767  000013  003730          CMPB    #13,PSW         ;IS THE PS 13?
007710  001401                          BEQ     .+4
007712  000000                          HLT                     ;THE PS IS NOT EQUAL TO 13
007714  022703  100000                  CMP     #100000,%3      ;IS THE RESULT 100000?
007720  001401                          BEQ     .+4
007722  000000                          HLT                     ;R3 IS NOT EQUAL TO 100000


                                ;*****************************************************************
                                ;TEST 150   ASH     125252 SHIFTED BY 1 = 52524  PS = 3
                                ;*****************************************************************

007724  010701                          SCOPE
007726  012703  125252                  MOV     #125252,%3      ;LOAD R3 WITH 125252
007732  072327  000001                  ASH     #1,%3           ;SHIFT R3 BY 1
007736  013767  177776  003674          MOV     @#PS,PSW        ;SAVE PS
007744  122767  000003  003666          CMPB    #3,PSW          ;IS THE PS 3?
007752  001401                          BEQ     .+4
007754  000000                          HLT                     ;THE PS IS NOT EQUAL TO 3
007756  022703  052524                  CMP     #52524,%3       ;IS THE RESULT 52524?
007762  001401                          BEQ     .+4
007764  000000                          HLT                     ;R3 IS NOT EQUAL TO 52524


                                ;*****************************************************************
                                ;TEST 151   ASH     125252 SHIFTED BY -1 = 152525  PS = 10
                                ;*****************************************************************

007766  010701                          SCOPE
007770  012703  125252                  MOV     #125252,%3      ;LOAD R3 WITH 125252
007774  072327  177777                  ASH     #-1,%3          ;SHIFT R3 BY -1
010000  013767  177776  003632          MOV     @#PS,PSW        ;SAVE PS
010006  122767  000010  003624          CMPB    #10,PSW         ;IS THE PS 10?
010014  001401                          BEQ     .+4
010016  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
010020  022703  152525                  CMP     #152525,%3      ;IS THE RESULT 152525?
010024  001401                          BEQ     .+4
010026  000000                          HLT                     ;R3 IS NOT EQUAL TO 152525
```

```
                                ;*****************************************************************
                                ;TEST 152   ASH     125252 SHIFTED BY -2 = 165252  PS = 11
                                ;*****************************************************************

010030  012701                          SCOPE
010032  012703  125252                  MOV     #125252,%3      ;LOAD R3 WITH 125252
010036  072327  177776                  ASH     #-2,%3          ;SHIFT R3 BY -2
010042  013767  177776  003570          MOV     @#PS,PSW        ;SAVE PS
010050  122767  000011  003562          CMPB    #11,PSW         ;IS THE PS 11?
010056  001401                          BEQ     .+4
010060  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
010062  022703  165252                  CMP     #165252,%3      ;IS THE RESULT 165252?
010066  001401                          BEQ     .+4
010070  000000                          HLT                     ;R3 IS NOT EQUAL TO 165252


                                ;*****************************************************************
                                ;TEST 153   ASH     40000 SHIFTED BY 177762 = 1  PS = 0
                                ;*****************************************************************

010072  012701                          SCOPE
010074  012704  040000                  MOV     #40000,%4       ;LOAD R4 WITH 40000
010100  072427  177762                  ASH     #177762,%4      ;SHIFT R4 BY 177762
010104  013767  177776  003526          MOV     @#PS,PSW        ;SAVE PS
010112  122767  000000  003520          CMPB    #0,PSW          ;IS THE PS 0?
010120  001401                          BEQ     .+4
010122  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
010124  022704  000001                  CMP     #1,%4           ;IS THE RESULT 1?
010130  001401                          BEQ     .+4
010132  000000                          HLT                     ;R4 IS NOT EQUAL TO 1


                                ;*****************************************************************
                                ;TEST 154   ASH     40000 SHIFTED BY 177763 = 2  PS = 0
                                ;*****************************************************************

010134  012701                          SCOPE
010136  012704  040000                  MOV     #40000,%4       ;LOAD R4 WITH 40000
010142  072427  177763                  ASH     #177763,%4      ;SHIFT R4 BY 177763
010146  013767  177776  003464          MOV     @#PS,PSW        ;SAVE PS
010154  122767  000000  003456          CMPB    #0,PSW          ;IS THE PS 0?
010162  001401                          BEQ     .+4
010164  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
010166  022704  000002                  CMP     #2,%4           ;IS THE RESULT 2?
010172  001401                          BEQ     .+4
010174  000000                          HLT                     ;R4 IS NOT EQUAL TO 2
```

```
                                ;*****************************************************************
                                ;TEST 155   ASH     40000 SHIFTED BY 177764 = 4  PS = 0
                                ;*****************************************************************

010176  010701                          SCOPE
010200  012704  040000                  MOV     #40000,%4       ;LOAD R4 WITH 40000
010204  072427  177764                  ASH     #177764,%4      ;SHIFT R4 BY 177764
010210  013767  177776  003422          MOV     @#PS,PSW        ;SAVE PS
010216  122767  000000  003414          CMPB    #0,PSW          ;IS THE PS 0?
010224  001401                          BEQ     .+4
010226  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
010230  022704  000004                  CMP     #4,%4           ;IS THE RESULT 4?
010234  001401                          BEQ     .+4
010236  000000                          HLT                     ;R4 IS NOT EQUAL TO 4


                                ;*****************************************************************
                                ;TEST 156   ASH     40000 SHIFTED BY 177765 = 10  PS = 0
                                ;*****************************************************************

010240  010701                          SCOPE
010242  012704  040000                  MOV     #40000,%4       ;LOAD R4 WITH 40000
010246  072427  177765                  ASH     #177765,%4      ;SHIFT R4 BY 177765
010252  013767  177776  003360          MOV     @#PS,PSW        ;SAVE PS
010260  122767  000000  003352          CMPB    #0,PSW          ;IS THE PS 0?
010266  001401                          BEQ     .+4
010270  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
010272  022704  000010                  CMP     #10,%4          ;IS THE RESULT 10?
010276  001401                          BEQ     .+4
010300  000000                          HLT                     ;R4 IS NOT EQUAL TO 10


                                ;*****************************************************************
                                ;TEST 157   ASH     40000 SHIFTED BY 177766 = 20  PS = 0
                                ;*****************************************************************

010302  010701                          SCOPE
010304  012704  040000                  MOV     #40000,%4       ;LOAD R4 WITH 40000
010310  072427  177766                  ASH     #177766,%4      ;SHIFT R4 BY 177766
010314  013767  177776  003316          MOV     @#PS,PSW        ;SAVE PS
010322  122767  000000  003310          CMPB    #0,PSW          ;IS THE PS 0?
010330  001401                          BEQ     .+4
010332  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
010334  022704  000020                  CMP     #20,%4          ;IS THE RESULT 20?
010340  001401                          BEQ     .+4
010342  000000                          HLT                     ;R4 IS NOT EQUAL TO 20
```

```
                                ;*****************************************************************
                                ;TEST 160   ASH     40000 SHIFTED BY 177767 = 40  PS = 0
                                ;*****************************************************************

010344  010701                          SCOPE
010346  012704  040000                  MOV     #40000,%4       ;LOAD R4 WITH 40000
010352  072427  177767                  ASH     #177767,%4      ;SHIFT R4 BY 177767
010356  013767  177776  003254          MOV     @#PS,PSW        ;SAVE PS
010364  122767  000000  003246          CMPB    #0,PSW          ;IS THE PS 0?
010372  001401                          BEQ     .+4
010374  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
010376  022704  000040                  CMP     #40,%4          ;IS THE RESULT 40?
010402  001401                          BEQ     .+4
010404  000000                          HLT                     ;R4 IS NOT EQUAL TO 40


                                ;*****************************************************************
                                ;TEST 161   ASH     40000 SHIFTED BY 177770 = 100  PS = 0
                                ;*****************************************************************

010406  010701                          SCOPE
010410  012704  040000                  MOV     #40000,%4       ;LOAD R4 WITH 40000
010414  072427  177770                  ASH     #177770,%4      ;SHIFT R4 BY 177770
010420  013767  177776  003212          MOV     @#PS,PSW        ;SAVE PS
010426  122767  000000  003204          CMPB    #0,PSW          ;IS THE PS 0?
010434  001401                          BEQ     .+4
010436  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
010440  022704  000100                  CMP     #100,%4         ;IS THE RESULT 100?
010444  001401                          BEQ     .+4
010446  000000                          HLT                     ;R4 IS NOT EQUAL TO 100


                                ;*****************************************************************
                                ;TEST 162   ASH     40000 SHIFTED BY 177771 = 200  PS = 0
                                ;*****************************************************************

010450  010701                          SCOPE
010452  012704  040000                  MOV     #40000,%4       ;LOAD R4 WITH 40000
010456  072427  177771                  ASH     #177771,%4      ;SHIFT R4 BY 177771
010462  013767  177776  003150          MOV     @#PS,PSW        ;SAVE PS
010470  122767  000000  003142          CMPB    #0,PSW          ;IS THE PS 0?
010476  001401                          BEQ     .+4
010500  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
010502  022704  000200                  CMP     #200,%4         ;IS THE RESULT 200?
010506  001401                          BEQ     .+4
010510  000000                          HLT                     ;R4 IS NOT EQUAL TO 200
```

```
                                ;*****************************************************************
                                ;TEST 163   ASH     40000 SHIFTED BY 177772 = 400  PS = 0
                                ;*****************************************************************

010512  010701                          SCOPE
010514  012704  040000                  MOV     #40000,%4       ;LOAD R4 WITH 40000
010520  072427  177772                  ASH     #177772,%4      ;SHIFT R4 BY 177772
010524  013767  177776  003106          MOV     @#PS,PSW        ;SAVE PS
010532  122767  000000  003100          CMPB    #0,PSW          ;IS THE PS 0?
010540  001401                          BEQ     .+4
010542  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
010544  022704  000400                  CMP     #400,%4         ;IS THE RESULT 400?
010550  001401                          BEQ     .+4
010552  000000                          HLT                     ;R4 IS NOT EQUAL TO 400


                                ;*****************************************************************
                                ;TEST 164   ASH     40000 SHIFTED BY 177773 = 1000  PS = 0
                                ;*****************************************************************

010554  010701                          SCOPE
010556  012704  040000                  MOV     #40000,%4       ;LOAD R4 WITH 40000
010562  072427  177773                  ASH     #177773,%4      ;SHIFT R4 BY 177773
010566  013767  177776  003044          MOV     @#PS,PSW        ;SAVE PS
010574  122767  000000  003036          CMPB    #0,PSW          ;IS THE PS 0?
010602  001401                          BEQ     .+4
010604  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
010606  022704  001000                  CMP     #1000,%4        ;IS THE RESULT 1000?
010612  001401                          BEQ     .+4
010614  000000                          HLT                     ;R4 IS NOT EQUAL TO 1000


                                ;*****************************************************************
                                ;TEST 165   ASH     40000 SHIFTED BY 177774 = 2000  PS = 0
                                ;*****************************************************************

010616  010701                          SCOPE
010620  012704  040000                  MOV     #40000,%4       ;LOAD R4 WITH 40000
010624  072427  177774                  ASH     #177774,%4      ;SHIFT R4 BY 177774
010630  013767  177776  003002          MOV     @#PS,PSW        ;SAVE PS
010636  122767  000000  002774          CMPB    #0,PSW          ;IS THE PS 0?
010644  001401                          BEQ     .+4
010646  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
010650  022704  002000                  CMP     #2000,%4        ;IS THE RESULT 2000?
010654  001401                          BEQ     .+4
010656  000000                          HLT                     ;R4 IS NOT EQUAL TO 2000
```

```
                                        ;*****************************************************************
                                        ;TEST 166   ASH     40000 SHIFTED BY 177775 = 4000  PS = 0
                                        ;*****************************************************************

010660  012701                          SCOPE
010662  012704  040000                  MOV     #40000,%4       ;LOAD R4 WITH 40000
010666  072427  177775                  ASH     #177775,%4      ;SHIFT R4 BY 177775
010672  013767  177776  002740          MOV     @#PS,PSW        ;SAVE PS
010700  122767  000000  002732          CMPB    #0,PSW          ;IS THE PS 0?
010706  001401                          BEQ     .+4
010710  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
010712  022704  004000                  CMP     #4000,%4        ;IS THE RESULT 4000?
010716  001401                          BEQ     .+4
010720  000000                          HLT                     ;R4 IS NOT EQUAL TO 4000


                                        ;*****************************************************************
                                        ;TEST 167   ASH     40000 SHIFTED BY 177776 = 10000  PS = 0
                                        ;*****************************************************************

010722  010701                          SCOPE
010724  012704  040000                  MOV     #40000,%4       ;LOAD R4 WITH 40000
010730  072427  177776                  ASH     #177776,%4      ;SHIFT R4 BY 177776
010734  013767  177776  002676          MOV     @#PS,PSW        ;SAVE PS
010742  122767  000000  002670          CMPB    #0,PSW          ;IS THE PS 0?
010750  001401                          BEQ     .+4
010752  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
010754  022704  010000                  CMP     #10000,%4       ;IS THE RESULT 10000?
010760  001401                          BEQ     .+4
010762  000000                          HLT                     ;R4 IS NOT EQUAL TO 10000


                                        ;*****************************************************************
                                        ;TEST 170   ASH     40000 SHIFTED BY 177777 = 20000  PS = 0
                                        ;*****************************************************************

010764  010701                          SCOPE
010766  012704  040000                  MOV     #40000,%4       ;LOAD R4 WITH 40000
010772  072427  177777                  ASH     #177777,%4      ;SHIFT R4 BY 177777
010776  013767  177776  002634          MOV     @#PS,PSW        ;SAVE PS
011004  122767  000000  002626          CMPB    #0,PSW          ;IS THE PS 0?
011012  001401                          BEQ     .+4
011014  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
011016  022704  020000                  CMP     #20000,%4       ;IS THE RESULT 20000?
011022  001401                          BEQ     .+4
011024  000000                          HLT                     ;R4 IS NOT EQUAL TO 20000
```

```
                                ;*****************************************************************
                                ;TEST 171   ASH     40000 SHIFTED BY 0 = 40000  PS = 0
                                ;*****************************************************************

011026  010701                          SCOPE
011030  012704  040000                  MOV     #40000,%4       ;LOAD R4 WITH 40000
011034  072427  000000                  ASH     #0,%4           ;SHIFT R4 BY 0
011040  013767  177776  002572          MOV     @#PS,PSW        ;SAVE PS
011046  122767  000000  002564          CMPB    #0,PSW          ;IS THE PS 0?
011054  001401                          BEQ     .+4
011056  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
011060  022704  040000                  CMP     #40000,%4       ;IS THE RESULT 40000?
011064  001401                          BEQ     .+4
011066  000000                          HLT                     ;R4 IS NOT EQUAL TO 40000


                                ;*****************************************************************
                                ;TEST 172   ASH     100000 SHIFTED BY -15. = -1  PS = 10
                                ;*****************************************************************

011070  010701                          SCOPE
011072  012704  100000                  MOV     #100000,%4      ;LOAD R4 WITH 100000
011076  072427  177761                  ASH     #-15.,%4        ;SHIFT R4 BY -15.
011102  013767  177776  002530          MOV     @#PS,PSW        ;SAVE PS
011110  122767  000010  002522          CMPB    #10,PSW         ;IS THE PS 10?
011116  001401                          BEQ     .+4
011120  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
011122  022704  177777                  CMP     #-1,%4          ;IS THE RESULT -1?
011126  001401                          BEQ     .+4
011130  000000                          HLT                     ;R4 IS NOT EQUAL TO -1


                                ;*****************************************************************
                                ;TEST 173   ASH     -1 SHIFTED BY 15. = 100000  PS = 11
                                ;*****************************************************************

011132  010701                          SCOPE
011134  012704  177777                  MOV     #-1,%4          ;LOAD R4 WITH -1
011140  072427  000017                  ASH     #15.,%4         ;SHIFT R4 BY 15.
011144  013767  177776  002466          MOV     @#PS,PSW        ;SAVE PS
011152  122767  000011  002460          CMPB    #11,PSW         ;IS THE PS 11?
011160  001401                          BEQ     .+4
011162  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
011164  022704  100000                  CMP     #100000,%4      ;IS THE RESULT 100000?
011170  001401                          BEQ     .+4
011172  000000                          HLT                     ;R4 IS NOT EQUAL TO 100000
```

```
                                ;*****************************************************************
                                ;TEST 174   ASH     -1 SHIFTED BY 16. = 0  PS = 7
                                ;*****************************************************************

011174  010701                          SCOPE
011176  012704  177777                  MOV     #-1,%4          ;LOAD R4 WITH -1
011202  072427  000020                  ASH     #16.,%4         ;SHIFT R4 BY 16.
011206  013767  177776  002424          MOV     @#PS,PSW        ;SAVE PS
011214  122767  000007  002416          CMPB    #7,PSW          ;IS THE PS 7?
011222  001401                          BEQ     .+4
011224  000000                          HLT                     ;THE PS IS NOT EQUAL TO 7
011226  022704  000000                  CMP     #0,%4           ;IS THE RESULT 0?
011232  001401                          BEQ     .+4
011234  000000                          HLT                     ;R4 IS NOT EQUAL TO 0


                                ;*****************************************************************
                                ;TEST 175   ASH     137777 SHIFTED BY 15. = 100000  PS = 13
                                ;*****************************************************************

011236  010701                          SCOPE
011240  012704  137777                  MOV     #137777,%4      ;LOAD R4 WITH 137777
011244  072427  000017                  ASH     #15.,%4         ;SHIFT R4 BY 15.
011250  013767  177776  002362          MOV     @#PS,PSW        ;SAVE PS
011256  122767  000013  002354          CMPB    #13,PSW         ;IS THE PS 13?
011264  001401                          BEQ     .+4
011266  000000                          HLT                     ;THE PS IS NOT EQUAL TO 13
011270  022704  100000                  CMP     #100000,%4      ;IS THE RESULT 100000?
011274  001401                          BEQ     .+4
011276  000000                          HLT                     ;R4 IS NOT EQUAL TO 100000


                                ;*****************************************************************
                                ;TEST 176   ASH     125252 SHIFTED BY 1 = 52524  PS = 3
                                ;*****************************************************************

011300  010701                          SCOPE
011302  012704  125252                  MOV     #125252,%4      ;LOAD R4 WITH 125252
011306  072427  000001                  ASH     #1,%4           ;SHIFT R4 BY 1
011312  013767  177776  002320          MOV     @#PS,PSW        ;SAVE PS
011320  122767  000003  002312          CMPB    #3,PSW          ;IS THE PS 3?
011326  001401                          BEQ     .+4
011330  000000                          HLT                     ;THE PS IS NOT EQUAL TO 3
011332  022704  052524                  CMP     #52524,%4       ;IS THE RESULT 52524?
011336  001401                          BEQ     .+4
011340  000000                          HLT                     ;R4 IS NOT EQUAL TO 52524
```

```
                                ;*****************************************************************
                                ;TEST 177   ASH     125252 SHIFTED BY -1 = 152525  PS = 10
                                ;*****************************************************************

011342  010701                          SCOPE
011344  012704  125252                  MOV     #125252,%4      ;LOAD R4 WITH 125252
011350  072427  177777                  ASH     #-1,%4          ;SHIFT R4 BY -1
011354  013767  177776  002256          MOV     @#PS,PSW        ;SAVE PS
011362  122767  000010  002250          CMPB    #10,PSW         ;IS THE PS 10?
011370  001401                          BEQ     .+4
011372  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
011374  022704  152525                  CMP     #152525,%4      ;IS THE RESULT 152525?
011400  001401                          BEQ     .+4
011402  000000                          HLT                     ;R4 IS NOT EQUAL TO 152525


                                ;*****************************************************************
                                ;TEST 200   ASH     125252 SHIFTED BY -2 = 165252  PS = 11
                                ;*****************************************************************

011404  010701                          SCOPE
011406  012704  125252                  MOV     #125252,%4      ;LOAD R4 WITH 125252
011412  072427  177776                  ASH     #-2,%4          ;SHIFT R4 BY -2
011416  013767  177776  002214          MOV     @#PS,PSW        ;SAVE PS
011424  122767  000011  002206          CMPB    #11,PSW         ;IS THE PS 11?
011432  001401                          BEQ     .+4
011434  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
011436  022704  165252                  CMP     #165252,%4      ;IS THE RESULT 165252?
011442  001401                          BEQ     .+4
011444  000000                          HLT                     ;R4 IS NOT EQUAL TO 165252


                                ;*****************************************************************
                                ;TEST 201   ASH     40000 SHIFTED BY 177762 = 1  PS = 0
                                ;*****************************************************************

011446  010701                          SCOPE
011450  012705  040000                  MOV     #40000,%5       ;LOAD R5 WITH 40000
011454  072527  177762                  ASH     #177762,%5      ;SHIFT R5 BY 177762
011460  013767  177776  002152          MOV     @#PS,PSW        ;SAVE PS
011466  122767  000000  002144          CMPB    #0,PSW          ;IS THE PS 0?
011474  001401                          BEQ     .+4
011476  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
011500  022705  000001                  CMP     #1,%5           ;IS THE RESULT 1?
011504  001401                          BEQ     .+4
011506  000000                          HLT                     ;R5 IS NOT EQUAL TO 1
```

```
                                        ;*****************************************************************
                                        ;TEST 202   ASH     40000 SHIFTED BY 177763 = 2  PS = 0
                                        ;*****************************************************************

011510  010701                          SCOPE
011512  012705  040000                  MOV     #40000,%5       ;LOAD R5 WITH 40000
011516  072527  177763                  ASH     #177763,%5      ;SHIFT R5 BY 177763
011522  013767  177776  002110          MOV     @#PS,PSW        ;SAVE PS
011530  122767  000000  002102          CMPB    #0,PSW          ;IS THE PS 0?
011536  001401                          BEQ     .+4
011540  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
011542  022705  000002                  CMP     #2,%5           ;IS THE RESULT 2?
011546  001401                          BEQ     .+4
011550  000000                          HLT                     ;R5 IS NOT EQUAL TO 2


                                        ;*****************************************************************
                                        ;TEST 203   ASH     40000 SHIFTED BY 177764 = 4  PS = 0
                                        ;*****************************************************************

011552  010701                          SCOPE
011554  012705  040000                  MOV     #40000,%5       ;LOAD R5 WITH 40000
011560  072527  177764                  ASH     #177764,%5      ;SHIFT R5 BY 177764
011564  013767  177776  002046          MOV     @#PS,PSW        ;SAVE PS
011572  122767  000000  002040          CMPB    #0,PSW          ;IS THE PS 0?
011600  001401                          BEQ     .+4
011602  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
011604  022705  000004                  CMP     #4,%5           ;IS THE RESULT 4?
011610  001401                          BEQ     .+4
011612  000000                          HLT                     ;R5 IS NOT EQUAL TO 4


                                        ;*****************************************************************
                                        ;TEST 204   ASH     40000 SHIFTED BY 177765 = 10  PS = 0
                                        ;*****************************************************************

011614  010701                          SCOPE
011616  012705  040000                  MOV     #40000,%5       ;LOAD R5 WITH 40000
011622  072527  177765                  ASH     #177765,%5      ;SHIFT R5 BY 177765
011626  013767  177776  002004          MOV     @#PS,PSW        ;SAVE PS
011634  122767  000000  001776          CMPB    #0,PSW          ;IS THE PS 0?
011642  001401                          BEQ     .+4
011644  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
011646  022705  000010                  CMP     #10,%5          ;IS THE RESULT 10?
011652  001401                          BEQ     .+4
011654  000000                          HLT                     ;R5 IS NOT EQUAL TO 10
```

```
                                ;*****************************************************************
                                ;TEST 205   ASH     40000 SHIFTED BY 177766 = 20  PS = 0
                                ;*****************************************************************

011656  010701                          SCOPE
011660  012705  040000                  MOV     #40000,%5       ;LOAD R5 WITH 40000
011664  072527  177766                  ASH     #177766,%5      ;SHIFT R5 BY 177766
011670  013767  177776  001742          MOV     @#PS,PSW        ;SAVE PS
011676  122767  000000  001734          CMPB    #0,PSW          ;IS THE PS 0?
011704  001401                          BEQ     .+4
011706  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
011710  022705  000020                  CMP     #20,%5          ;IS THE RESULT 20?
011714  001401                          BEQ     .+4
011716  000000                          HLT                     ;R5 IS NOT EQUAL TO 20


                                ;*****************************************************************
                                ;TEST 206   ASH     40000 SHIFTED BY 177767 = 40  PS = 0
                                ;*****************************************************************

011720  010701                          SCOPE
011722  012705  040000                  MOV     #40000,%5       ;LOAD R5 WITH 40000
011726  072527  177767                  ASH     #177767,%5      ;SHIFT R5 BY 177767
011732  013767  177776  001700          MOV     @#PS,PSW        ;SAVE PS
011740  122767  000000  001672          CMPB    #0,PSW          ;IS THE PS 0?
011746  001401                          BEQ     .+4
011750  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
011752  022705  000040                  CMP     #40,%5          ;IS THE RESULT 40?
011756  001401                          BEQ     .+4
011760  000000                          HLT                     ;R5 IS NOT EQUAL TO 40


                                ;*****************************************************************
                                ;TEST 207   ASH     40000 SHIFTED BY 177770 = 100  PS = 0
                                ;*****************************************************************

011762  010701                          SCOPE
011764  012705  040000                  MOV     #40000,%5       ;LOAD R5 WITH 40000
011770  072527  177770                  ASH     #177770,%5      ;SHIFT R5 BY 177770
011774  013767  177776  001636          MOV     @#PS,PSW        ;SAVE PS
012002  122767  000000  001630          CMPB    #0,PSW          ;IS THE PS 0?
012010  001401                          BEQ     .+4
012012  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
012014  022705  000100                  CMP     #100,%5         ;IS THE RESULT 100?
012020  001401                          BEQ     .+4
012022  000000                          HLT                     ;R5 IS NOT EQUAL TO 100
```

```
                                ;*****************************************************************
                                ;TEST 210   ASH     40000 SHIFTED BY 177771 = 200  PS = 2
                                ;*****************************************************************

012024  010701                          SCOPE
012026  012705  040000                  MOV     #40000,%5       ;LOAD R5 WITH 40000
012032  072527  177771                  ASH     #177771,%5      ;SHIFT R5 BY 177771
012036  013767  177776  001574          MOV     @#PS,PSW        ;SAVE PS
012044  122767  000000  001566          CMPB    #0,PSW          ;IS THE PS 0?
012052  001401                          BEQ     .+4
012054  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
012056  022705  000200                  CMP     #200,%5         ;IS THE RESULT 200?
012062  001401                          BEQ     .+4
012064  000000                          HLT                     ;R5 IS NOT EQUAL TO 200


                                ;*****************************************************************
                                ;TEST 211   ASH     40000 SHIFTED BY 177772 = 400  PS = 0
                                ;*****************************************************************

012066  010701                          SCOPE
012070  012705  040000                  MOV     #40000,%5       ;LOAD R5 WITH 40000
012074  072527  177772                  ASH     #177772,%5      ;SHIFT R5 BY 177772
012100  013767  177776  001532          MOV     @#PS,PSW        ;SAVE PS
012106  122767  000000  001524          CMPB    #0,PSW          ;IS THE PS 0?
012114  001401                          BEQ     .+4
012116  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
012120  022705  000400                  CMP     #400,%5         ;IS THE RESULT 400?
012124  001401                          BEQ     .+4
012126  000000                          HLT                     ;R5 IS NOT EQUAL TO 400


                                ;*****************************************************************
                                ;TEST 212   ASH     40000 SHIFTED BY 177773 = 1000  PS = 0
                                ;*****************************************************************

012130  010701                          SCOPE
012132  012705  040000                  MOV     #40000,%5       ;LOAD R5 WITH 40000
012136  072527  177773                  ASH     #177773,%5      ;SHIFT R5 BY 177773
012142  013767  177776  001470          MOV     @#PS,PSW        ;SAVE PS
012150  122767  000000  001462          CMPB    #0,PSW          ;IS THE PS 0?
012156  001401                          BEQ     .+4
012160  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
012162  022705  001000                  CMP     #1000,%5        ;IS THE RESULT 1000?
012166  001401                          BEQ     .+4
012170  000000                          HLT                     ;R5 IS NOT EQUAL TO 1000
```

```
                                ;*****************************************************************
                                ;TEST 213   ASH     40000 SHIFTED BY 177774 = 2000  PS = 0
                                ;*****************************************************************

012172  010701                          SCOPE
012174  012705  040000                  MOV     #40000,%5       ;LOAD R5 WITH 40000
012200  072527  177774                  ASH     #177774,%5      ;SHIFT R5 BY 177774
012204  013767  177776  001426          MOV     @#PS,PSW        ;SAVE PS
012212  122767  000000  001420          CMPB    #0,PSW          ;IS THE PS 0?
012220  001401                          BEQ     .+4
012222  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
012224  022705  002000                  CMP     #2000,%5        ;IS THE RESULT 2000?
012230  001401                          BEQ     .+4
012232  000000                          HLT                     ;R5 IS NOT EQUAL TO 2000


                                ;*****************************************************************
                                ;TEST 214   ASH     40000 SHIFTED BY 177775 = 4000  PS = 0
                                ;*****************************************************************

012234  010701                          SCOPE
012236  012705  040000                  MOV     #40000,%5       ;LOAD R5 WITH 40000
012242  072527  177775                  ASH     #177775,%5      ;SHIFT R5 BY 177775
012246  013767  177776  001364          MOV     @#PS,PSW        ;SAVE PS
012254  122767  000000  001356          CMPB    #0,PSW          ;IS THE PS 0?
012262  001401                          BEQ     .+4
012264  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
012266  022705  004000                  CMP     #4000,%5        ;IS THE RESULT 4000?
012272  001401                          BEQ     .+4
012274  000000                          HLT                     ;R5 IS NOT EQUAL TO 4000


                                ;*****************************************************************
                                ;TEST 215   ASH     40000 SHIFTED BY 177776 = 10000  PS = 0
                                ;*****************************************************************

012276  010701                          SCOPE
012300  012705  040000                  MOV     #40000,%5       ;LOAD R5 WITH 40000
012304  072527  177776                  ASH     #177776,%5      ;SHIFT R5 BY 177776
012310  013767  177776  001322          MOV     @#PS,PSW        ;SAVE PS
012316  122767  000000  001314          CMPB    #0,PSW          ;IS THE PS 0?
012324  001401                          BEQ     .+4
012326  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
012330  022705  010000                  CMP     #10000,%5       ;IS THE RESULT 10000?
012334  001401                          BEQ     .+4
012336  000000                          HLT                     ;R5 IS NOT EQUAL TO 10000
```

```
                        ;*****************************************************************
                        ;TEST 216   ASH     40000 SHIFTED BY 177777 = 20000  PS = 0
                        ;*****************************************************************

012340  010701                          SCOPE
012342  012705  040000                  MOV     #40000,%5       ;LOAD R5 WITH 40000
012346  072527  177777                  ASH     #177777,%5      ;SHIFT R5 BY 177777
012352  013767  177776  001260          MOV     @#PS,PSW        ;SAVE PS
012360  122767  000020  001252          CMPB    #0,PSW          ;IS THE PS 0?
012366  001401                          BEQ     .+4
012370  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
012372  022705  020000                  CMP     #20000,%5       ;IS THE RESULT 20000?
012376  001401                          BEQ     .+4
012400  000000                          HLT                     ;R5 IS NOT EQUAL TO 20000


                        ;*****************************************************************
                        ;TEST 217   ASH     40000 SHIFTED BY 0 = 40000  PS = 0
                        ;*****************************************************************

012402  010701                          SCOPE
012404  012705  040000                  MOV     #40000,%5       ;LOAD R5 WITH 40000
012410  072527  000000                  ASH     #0,%5           ;SHIFT R5 BY 0
012414  013767  177776  001216          MOV     @#PS,PSW        ;SAVE PS
012422  122767  000000  001210          CMPB    #0,PSW          ;IS THE PS 0?
012430  001401                          BEQ     .+4
012432  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
012434  022705  040000                  CMP     #40000,%5       ;IS THE RESULT 40000?
012440  001401                          BEQ     .+4
012442  000000                          HLT                     ;R5 IS NOT EQUAL TO 40000


                        ;*****************************************************************
                        ;TEST 220   ASH     100000 SHIFTED BY -15. = -1  PS = 10
                        ;*****************************************************************

012444  010701                          SCOPE
012446  012705  100000                  MOV     #100000,%5      ;LOAD R5 WITH 100000
012452  072527  177761                  ASH     #-15.,%5        ;SHIFT R5 BY -15.
012456  013767  177776  001154          MOV     @#PS,PSW        ;SAVE PS
012464  122767  000010  001146          CMPB    #10,PSW         ;IS THE PS 10?
012472  001401                          BEQ     .+4
012474  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
012476  022705  177777                  CMP     #-1,%5          ;IS THE RESULT -1?
012502  001401                          BEQ     .+4
012504  000000                          HLT                     ;R5 IS NOT EQUAL TO -1
```

```
                                ;*****************************************************************
                                ;TEST 221   ASH     -1 SHIFTED BY 15, = 100000  PS = 11
                                ;*****************************************************************

012506  010701                          SCOPE
012510  012705  177777                  MOV     #-1,%5          ;LOAD R5 WITH -1
012514  072527  000017                  ASH     #15.,%5         ;SHIFT R5 BY 15.
012520  013767  177776  001112          MOV     @#PS,PSW        ;SAVE PS
012526  122767  000011  001104          CMPB    #11,PSW         ;IS THE PS 11?
012534  001401                          BEQ     .+4
012536  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
012540  022705  100000                  CMP     #100000,%5      ;IS THE RESULT 100000?
012544  001401                          BEQ     .+4
012546  000000                          HLT                     ;R5 IS NOT EQUAL TO 100000


                                ;*****************************************************************
                                ;TEST 222   ASH     -1 SHIFTED BY 16, = 0  PS = 7
                                ;*****************************************************************

012550  010701                          SCOPE
012552  012705  177777                  MOV     #-1,%5          ;LOAD R5 WITH -1
012556  072527  000020                  ASH     #16.,%5         ;SHIFT R5 BY 16.
012562  013767  177776  001050          MOV     @#PS,PSW        ;SAVE PS
012570  122767  000007  001042          CMPB    #7,PSW          ;IS THE PS 7?
012576  001401                          BEQ     .+4
012600  000000                          HLT                     ;THE PS IS NOT EQUAL TO 7
012602  022705  000000                  CMP     #0,%5           ;IS THE RESULT 0?
012606  001401                          BEQ     .+4
012610  000000                          HLT                     ;R5 IS NOT EQUAL TO 0


                                ;*****************************************************************
                                ;TEST 223   ASH     137777 SHIFTED BY 15, = 100000  PS = 13
                                ;*****************************************************************

012612  010701                          SCOPE
012614  012705  137777                  MOV     #137777,%5      ;LOAD R5 WITH 137777
012620  072527  000017                  ASH     #15.,%5         ;SHIFT R5 BY 15.
012624  013767  177776  001006          MOV     @#PS,PSW        ;SAVE PS
012632  122767  000013  001000          CMPB    #13,PSW         ;IS THE PS 13?
012640  001401                          BEQ     .+4
012642  000000                          HLT                     ;THE PS IS NOT EQUAL TO 13
012644  022705  100000                  CMP     #100000,%5      ;IS THE RESULT 100000?
012650  001401                          BEQ     .+4
012652  000000                          HLT                     ;R5 IS NOT EQUAL TO 100000
```

```
                                ;*****************************************************************
                                ;TEST 224   ASH     125252 SHIFTED BY 1 = 52524  PS = 3
                                ;*****************************************************************

012654  010701                          SCOPE
012656  012705  125252                  MOV     #125252,%5      ;LOAD R5 WITH 125252
012662  072527  000001                  ASH     #1,%5           ;SHIFT R5 BY 1
012666  013767  177776  000744          MOV     @#PS,PSW        ;SAVE PS
012674  122767  000003  000736          CMPB    #3,PSW          ;IS THE PS 3?
012702  001401                          BEQ     .+4
012704  000000                          HLT                     ;THE PS IS NOT EQUAL TO 3
012706  022705  052524                  CMP     #52524,%5       ;IS THE RESULT 52524?
012712  001401                          BEQ     .+4
012714  000000                          HLT                     ;R5 IS NOT EQUAL TO 52524


                                ;*****************************************************************
                                ;TEST 225   ASH     125252 SHIFTED BY -1 = 152525  PS = 10
                                ;*****************************************************************

012716  010701                          SCOPE
012720  012705  125252                  MOV     #125252,%5      ;LOAD R5 WITH 125252
012724  072527  177777                  ASH     #-1,%5          ;SHIFT R5 BY -1
012730  013767  177776  000702          MOV     @#PS,PSW        ;SAVE PS
012736  122767  000010  000674          CMPB    #10,PSW         ;IS THE PS 10?
012744  001401                          BEQ     .+4
012746  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
012750  022705  152525                  CMP     #152525,%5      ;IS THE RESULT 152525?
012754  001401                          BEQ     .+4
012756  000000                          HLT                     ;R5 IS NOT EQUAL TO 152525


                                ;*****************************************************************
                                ;TEST 226   ASH     125252 SHIFTED BY -2 = 165252  PS = 11
                                ;*****************************************************************

012760  010701                          SCOPE
012762  012705  125252                  MOV     #125252,%5      ;LOAD R5 WITH 125252
012766  072527  177776                  ASH     #-2,%5          ;SHIFT R5 BY -2
012772  013767  177776  000640          MOV     @#PS,PSW        ;SAVE PS
013000  122767  000011  000632          CMPB    #11,PSW         ;IS THE PS 11?
013006  001401                          BEQ     .+4
013010  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
013012  022705  165252                  CMP     #165252,%5      ;IS THE RESULT 165252?
013016  001401                          BEQ     .+4
013020  000000                          HLT                     ;R5 IS NOT EQUAL TO 165252


013022  012704  177771                  MOV     #-7,%4
013026  012702  013644                  MOV     #S1,%2
013032  012703  013646                  MOV     #S2,%3
```

```
                                        ;*****************************************************************
                                        ;TEST 227   11/40 ASH     125252 SHIFTED BY S1 = 177525  PS = 10
                                        ;*****************************************************************

013036  010701                          SCOPE
013040  012700  125252                  MOV     #125252,%0      ;LOAD R0 WITH 125252
013044  072067  000574                  ASH     S1,%0           ;SHIFT R0 BY S1
013050  013767  177776  000562          MOV     @#PS,PSW        ;SAVE PS
013056  122767  000010  000554          CMPB    #10,PSW         ;IS THE PS 10?
013064  001401                          BEQ     .+4
013066  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
013070  022700  177525                  CMP     #177525,%0      ;IS THE RESULT 177525?
013074  001401                          BEQ     .+4
013076  000000                          HLT                     ;R0 IS NOT EQUAL TO 177525


                                        ;*****************************************************************
                                        ;TEST 230   11/40 ASH     125252 SHIFTED BY @S2 = 177525  PS = 10
                                        ;*****************************************************************

013100  010701                          SCOPE
013102  012700  125252                  MOV     #125252,%0      ;LOAD R0 WITH 125252
013106  072077  000534                  ASH     @S2,%0          ;SHIFT R0 BY @S2
013112  013767  177776  000520          MOV     @#PS,PSW        ;SAVE PS
013120  122767  000010  000512          CMPB    #10,PSW         ;IS THE PS 10?
013126  001401                          BEQ     .+4
013130  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
013132  022700  177525                  CMP     #177525,%0      ;IS THE RESULT 177525?
013136  001401                          BEQ     .+4
013140  000000                          HLT                     ;R0 IS NOT EQUAL TO 177525


                                        ;*****************************************************************
                                        ;TEST 231   11/40 ASH     125252 SHIFTED BY @#S1 = 177525  PS = 10
                                        ;*****************************************************************

013142  010701                          SCOPE
013144  012700  125252                  MOV     #125252,%0      ;LOAD R0 WITH 125252
013150  072037  013644                  ASH     @#S1,%0         ;SHIFT R0 BY @#S1
013154  013767  177776  000456          MOV     @#PS,PSW        ;SAVE PS
013162  122767  000010  000450          CMPB    #10,PSW         ;IS THE PS 10?
013170  001401                          BEQ     .+4
013172  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
013174  022700  177525                  CMP     #177525,%0      ;IS THE RESULT 177525?
013200  001401                          BEQ     .+4
013202  000000                          HLT                     ;R0 IS NOT EQUAL TO 177525
```

```
                                ;*****************************************************************
                                ;TEST 232   11/40 ASH     125252 SHIFTED BY %4 = 177525  PS = 10
                                ;*****************************************************************

013204  010701                          SCOPE
013206  012700  125252                  MOV     #125252,%0      ;LOAD R0 WITH 125252
013212  072004                          ASH     %4,%0           ;SHIFT R0 BY %4
013214  013767  177776  000416          MOV     @#PS,PSW        ;SAVE PS
013222  122767  000010  000410          CMPB    #10,PSW         ;IS THE PS 10?
013230  001401                          BEQ     .+4
013232  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
013234  022700  177525                  CMP     #177525,%0      ;IS THE RESULT 177525?
013240  001401                          BEQ     .+4
013242  000000                          HLT                     ;R0 IS NOT EQUAL TO 177525


                                ;*****************************************************************
                                ;TEST 233   11/40 ASH     125252 SHIFTED BY (2)+ = 177525  PS = 10
                                ;*****************************************************************

013244  010701                          SCOPE
013246  012700  125252                  MOV     #125252,%0      ;LOAD R0 WITH 125252
013252  072022                          ASH     (2)+,%0         ;SHIFT R0 BY (2)+
013254  013767  177776  000356          MOV     @#PS,PSW        ;SAVE PS
013262  122767  000010  000350          CMPB    #10,PSW         ;IS THE PS 10?
013270  001401                          BEQ     .+4
013272  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
013274  022700  177525                  CMP     #177525,%0      ;IS THE RESULT 177525?
013300  001401                          BEQ     .+4
013302  000000                          HLT                     ;R0 IS NOT EQUAL TO 177525


                                ;*****************************************************************
                                ;TEST 234   11/40 ASH     125252 SHIFTED BY -(2) = 177525  PS = 10
                                ;*****************************************************************

013304  010701                          SCOPE
013306  012700  125252                  MOV     #125252,%0      ;LOAD R0 WITH 125252
013312  072042                          ASH     -(2),%0         ;SHIFT R0 BY -(2)
013314  013767  177776  000316          MOV     @#PS,PSW        ;SAVE PS
013322  122767  000010  000310          CMPB    #10,PSW         ;IS THE PS 10?
013330  001401                          BEQ     .+4
013332  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
013334  022700  177525                  CMP     #177525,%0      ;IS THE RESULT 177525?
013340  001401                          BEQ     .+4
013342  000000                          HLT                     ;R0 IS NOT EQUAL TO 177525
```

```
                                ;*****************************************************************
                                ;TEST 235   11/40 ASH     125252 SHIFTED BY 2(3) = 177252  PS = 11
                                ;*****************************************************************

013344  010701                          SCOPE
013346  012700  125252                  MOV     #125252,%0      ;LOAD R0 WITH 125252
013352  072063  000002                  ASH     2(3),%0         ;SHIFT R0 BY 2(3)
013356  013767  177776  000254          MOV     @#PS,PSW        ;SAVE PS
013364  122767  000011  000246          CMPB    #11,PSW         ;IS THE PS 11?
013372  001401                          BEQ     .+4
013374  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
013376  022700  177252                  CMP     #177252,%0      ;IS THE RESULT 177252?
013402  001401                          BEQ     .+4
013404  000000                          HLT                     ;R0 IS NOT EQUAL TO 177252


                                ;*****************************************************************
                                ;TEST 236   11/40 ASH     125252 SHIFTED BY @(3) = 177525  PS = 10
                                ;*****************************************************************

013406  010701                          SCOPE
013410  012700  125252                  MOV     #125252,%0      ;LOAD R0 WITH 125252
013414  072073  000000                  ASH     @(3),%0         ;SHIFT R0 BY @(3)
013420  013767  177776  000212          MOV     @#PS,PSW        ;SAVE PS
013426  122767  000010  000204          CMPB    #10,PSW         ;IS THE PS 10?
013434  001401                          BEQ     .+4
013436  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
013440  022700  177525                  CMP     #177525,%0      ;IS THE RESULT 177525?
013444  001401                          BEQ     .+4
013446  000000                          HLT                     ;R0 IS NOT EQUAL TO 177525


                                ;*****************************************************************
                                ;TEST 237   11/40 ASH     125252 SHIFTED BY @(3)+ = 177525  PS = 10
                                ;*****************************************************************

013450  010701                          SCOPE
013452  012700  125252                  MOV     #125252,%0      ;LOAD R0 WITH 125252
013456  072033                          ASH     @(3)+,%0        ;SHIFT R0 BY @(3)+
013460  013767  177776  000152          MOV     @#PS,PSW        ;SAVE PS
013466  122767  000010  000144          CMPB    #10,PSW         ;IS THE PS 10?
013474  001401                          BEQ     .+4
013476  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
013500  022700  177525                  CMP     #177525,%0      ;IS THE RESULT 177525?
013504  001401                          BEQ     .+4
013506  000000                          HLT                     ;R0 IS NOT EQUAL TO 177525
```

```
                                ;*****************************************************************
                                ;TEST 240   11/40 ASH     125252 SHIFTED BY @-(3) = 177525  PS = 10
                                ;*****************************************************************

013510  010701                          SCOPE
013512  012700  125252                  MOV     #125252,%0      ;LOAD R0 WITH 125252
013516  072053                          ASH     @-(3),%0        ;SHIFT R0 BY @-(3)
013520  013767  177776  000112          MOV     @#PS,PSW        ;SAVE PS
013526  122767  000010  000104          CMPB    #10,PSW         ;IS THE PS 10?
013534  001401                          BEQ     .+4
013536  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
013540  022700  177525                  CMP     #177525,%0      ;IS THE RESULT 177525?
013544  001401                          BEQ     .+4
013546  000000                          HLT                     ;R0 IS NOT EQUAL TO 177525



013550  005267  165224                  INC     ICNT
013554  016737  165220  177570          MOV     ICNT,@#DISPLAY
013562  022767  020000  165210          CMP     #20000,ICNT
013570  001402                          BEQ     .+6
013572  000167  165204                  JMP     BEG
013576  005067  165176                  CLR     ICNT
013602  105737  177564                  TSTB    @#177564
013606  100375                          BPL     .-4
013610  112737  000007  177566          MOVB    #7,@#177566
013616  013700  000042                  MOV     @#42,%0         ;GET MONITOR RETURN ADDRESS
013622  001404                          BEQ     1$              ;SKIP IF NONE
013624  004710                          JSR     7,(0)           ;GO BACK TO THE MONITOR
013626  000240                          NOP
013630  000240                          NOP
013632  000240                          NOP
013634  000137  000200          1$:     JMP     @#200           ;RESTART THE PROGRAM

013640  000000                  PSW:    0
013642  000007                  S0:     7
013644  177771                  S1:     -7
013646  013644                  S2:     S1
013650  177772                  S3:     -6

        000001                  .END
```

```
BEG     001002          DISPLA = 177570          DUMMY   = 000000          HLT     = 000002
ICNT    001000          M      = 000006          N       = 000241          PS      = 177776
PSW     013640          R      = 100000          SCOPE   = 012701          SWR     = 177570
S0      013642          S1       013644          S2        013646          S3        013650
T     = 000001          .      = 013652
```

ERRORS DETECTED: 0

IDENTIFICATION

PRODUCT CODE:	MAINDEC-11-DCKBJ-A1-D
PRODUCT NAME:	ASHC INSTRUCTION TEST
DATE CREATED:	MARCH 15, 1972
MAINTAINER:	DIAGNOSTIC GROUP
AUTHOR:	B. BRAIN

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1,0 ABSTRACT

THIS PROGRAM WILL INCREMENTLY TEST AND ISOLATE SIMPLE MALFUNCTIONS
RELATED TO THE ASHC INSTRUCTION

2,0 REQUIREMENTS

2,1 EQUIPMENT
BASIC 11/45 SYSTEM OR
11/40 WITH KE11-E OPTION

2,2 STORAGE
THIS PROGRAM USES 0 THRU 17500

2,3 PRELIMINARY PROGRAMS
D0AA THRU D0MA

3,0 LOADING PROCEDURE
LOAD PROGRAM USING ABS LOADER

4,0 STARTING PROCEDURE
LOAD ADDRESS 200, PRESS START, THE PROGRAM WILL LOOP
AND RING BELL ON PASS COMPLETION,

5,0 OPERATING PROCEDURE

5,1 SWITCH SETTINGS
NONE

5,2 SUBROUTINE ABSTRACTS

5,2,1 SCOPE
SCOPE IS A MOVE PC,R1 AND STORES THE PC+2 IN R1,

5,2,2 HLT
HLT IS A HALT INSTRUCTION,

6,0 ERRORS
ALL ERRORS WILL CAUSE A HALT
TRAP AND INTERRUPT ERRORS WILL CAUSE A HALT AT VECTOR+2,

6,1 ERROR RECOVERY
PRESS CONTINUE TO PROCEDE TO NEXT TEST

6,2 ERROR LOOPING
TO LOOP ON AN ERROR, PLACE A BRANCH TO THE PREVIOUS SCOPE
INSTRUCTION IN PLACE OF THE HALT INSTRUCTION,
NOTE THAT IF THE ERROR IS INTERMITTANT THAT THE TEST WILL
DROP THRU THE HALT AND PROCEED TO THE NEXT TEST,
THEREFORE, TO LOOP THE TEST CONTINUOSLY REPLACE THE BEQ .+4
INSTRUCTION IMMEDIATLY PRECEEDING THE HALT WITH A BRANCH
BACK TO THE PREVIOUS SCOPE,

TO LOOP ON TRAP FAILURES, PATCH IN THE FOLLOWING ROUTINE
AT THE ADDRESS OF THE TRAP VECTOR,

```
TRAPVEC:        TRAPVEC+4
TRAPVEC+2:      0
TRAPVEC+4:      012716  ;MOVE SCOPE ADDRESS TO STACK
TRAPVEC+6:      ADDRESS ;ADDRESS OF PREVIOUS SCOPE
TRAPVEC+10:     000006  ;RETURN TO TEST AT SCOPE
```

RESTORE ALL LOCATIONS BEFORE PROCEEDING TO NEXT TEST.

7.0 RESTRICTIONS
NONE

8.0 MISCELLANEOUS
ON TRAP ERRORS THE STACK POINTER(R6) WILL CONTAIN THE ADDRESS WHERE THE TRAP OCCURED.

8.1 EXECUTION TIME
THE PROGRAM TAKES ABOUT 1 MINUTE.

8.2 STACK POINTER
THE PROGRAM INITIALY SETS THE STACK POINTER AT 500.

9.0 PROGRAM DESCRIPTIONS

THIS IS A TEST OF THE ASHC INSTRUCTION. IT TESTS ASHC WITH DIFFERENT SHIFT COUNTS IN ALL THE REGISTERS INCLUDING ODD REGISTERS.

```
                                        .TITLE  MAINDEC-11-DCKBJ-A  ASHC TEST
                                        ;COPYRIGHT 1972, DIGITAL EQUIPMENT CORP., MAYNARD, MASS
                                        ;PROGRAM BY BOB BRAIN

                                        .ABS

                010701                  SCOPE=  10701
                000000                  HLT=    HALT
                177776                  PS=     177776
                177570                  SWR=    177570
                177570                  DISPLAY=SWR
                000001                  N=      1
                000000                  DUMMY=  0
                000000                  M=0

                000000                  .=0                             ;TRAP CATCHER 0 - 776

                000200                  .=      200
000200          000167  000576                  JMP     BEG
                001000                  .=      1000

001000          000000                  ;CNT:   0                       ;PASS COUNT

001002          012706  000500          BEG:    MOV     #500,%6         ;** STACK AT 500 **
001006          005037  177776                  CLR     @#PS
001012          032737  001000  177570          BIT     #1000,@#SWR     ;WHICH REGISTER SET?
001020          001403                          BEQ     .+10
001022          012737  004000  177776          MOV     #4000,@#PS      ;ALTERNATE!
001030          032767  000400  176532          BIT     #400,SWR        ;LOAD UB REG?
001036          001403                          BEQ     .+10
001040          116767  176524  176722          MOVB    SWR,177770
```

```
                                ;*****************************************************************
                                ;TEST 1     0 0 SHIFTED BY 0 = 0 0  PS = 4
                                ;*****************************************************************

001046  010701                          SCOPE
001050  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
001054  012701  000000                  MOV     #0,%0+1         ;LOAD R0+1 WITH 0
001060  000241                          CLC
001062  073027  000000                  ASHC    #0,%0           ;SHIFT R0,R0+1 BY 0
001066  013767  177776  013654          MOV     @#PS,PSW        ;SAVE PS
001074  122767  000004  013646          CMPB    #4,PSW          ;IS THE PS 4?
001102  001401                          BEQ     .+4
001104  000000                          HLT                     ;THE PS IS NOT EQUAL TO 4
001106  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
001112  001401                          BEQ     .+4
001114  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
001116  022701  000000                  CMP     #0,%0+1         ;IS THE RESULT 0?
001122  001401                          BEQ     .+4
001124  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 0

                                ;*****************************************************************
                                ;TEST 2     0 0 SHIFTED BY -32. = 0 0  PS = 4
                                ;*****************************************************************

001126  010701                          SCOPE
001130  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
001134  012701  000000                  MOV     #0,%0+1         ;LOAD R0+1 WITH 0
001140  000241                          CLC
001142  073027  177740                  ASHC    #-32.,%0        ;SHIFT R0,R0+1 BY -32.
001146  013767  177776  013574          MOV     @#PS,PSW        ;SAVE PS
001154  122767  000004  013566          CMPB    #4,PSW          ;IS THE PS 4?
001162  001401                          BEQ     .+4
001164  000000                          HLT                     ;THE PS IS NOT EQUAL TO 4
001166  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
001172  001401                          BEQ     .+4
001174  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
001176  022701  000000                  CMP     #0,%0+1         ;IS THE RESULT 0?
001202  001401                          BEQ     .+4
001204  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 0
```

```
                                ;*****************************************************************
                                ;TEST 3     0 0 SHIFTED BY 32. = 0 0  PS = 4
                                ;*****************************************************************

001206  010701                          SCOPE
001210  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
001214  012701  000000                  MOV     #0,%0+1         ;LOAD R0+1 WITH 0
001220  000241                          CLC
001222  073027  000040                  ASHC    #32.,%0         ;SHIFT R0,R0+1 BY 32.
001226  013767  177776  013514          MOV     @#PS,PSW        ;SAVE PS
001234  122767  000004  013506          CMPB    #4,PSW          ;IS THE PS 4?
001242  001401                          BEQ     .+4
001244  000000                          HLT                     ;THE PS IS NOT EQUAL TO 4
001246  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
001252  001401                          BEQ     .+4
001254  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
001256  022701  000000                  CMP     #0,%0+1         ;IS THE RESULT 0?
001262  001401                          BEQ     .+4
001264  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 0


                                ;*****************************************************************
                                ;TEST 4     0 1 SHIFTED BY 0 = 0 1  PS = 0
                                ;*****************************************************************

001266  010701                          SCOPE
001270  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
001274  012701  000001                  MOV     #1,%0+1         ;LOAD R0+1 WITH 1
001300  000241                          CLC
001302  073027  000000                  ASHC    #0,%0           ;SHIFT R0,R0+1 BY 0
001306  013767  177776  013434          MOV     @#PS,PSW        ;SAVE PS
001314  122767  000000  013426          CMPB    #0,PSW          ;IS THE PS 0?
001322  001401                          BEQ     .+4
001324  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
001326  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
001332  001401                          BEQ     .+4
001334  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
001336  022701  000001                  CMP     #1,%0+1         ;IS THE RESULT 1?
001342  001401                          BEQ     .+4
001344  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 1
```

```
                                ;*****************************************************************
                                ;TEST 5     0 1 SHIFTED BY 1 = 0 2  PS = 0
                                ;*****************************************************************

001346  010701                          SCOPE
001350  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
001354  012701  000001                  MOV     #1,%0+1         ;LOAD R0+1 WITH 1
001360  000241                          CLC
001362  073027  000001                  ASHC    #1,%0           ;SHIFT R0,R0+1 BY 1
001366  013767  177776  013354          MOV     @#PS,PSW        ;SAVE PS
001374  122767  000000  013346          CMPB    #0,PSW          ;IS THE PS 0?
001402  001401                          BEQ     .+4
001404  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
001406  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
001412  001401                          BEQ     .+4
001414  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
001416  022701  000002                  CMP     #2,%0+1         ;IS THE RESULT 2?
001422  001401                          BEQ     .+4
001424  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 2


                                ;*****************************************************************
                                ;TEST 6     0 1 SHIFTED BY 2 = 0 4  PS = 0
                                ;*****************************************************************

001426  010701                          SCOPE
001430  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
001434  012701  000001                  MOV     #1,%0+1         ;LOAD R0+1 WITH 1
001440  000241                          CLC
001442  073027  000002                  ASHC    #2,%0           ;SHIFT R0,R0+1 BY 2
001446  013767  177776  013274          MOV     @#PS,PSW        ;SAVE PS
001454  122767  000000  013266          CMPB    #0,PSW          ;IS THE PS 0?
001462  001401                          BEQ     .+4
001464  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
001466  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
001472  001401                          BEQ     .+4
001474  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
001476  022701  000004                  CMP     #4,%0+1         ;IS THE RESULT 4?
001502  001401                          BEQ     .+4
001504  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 4
```

```
                                        ;*****************************************************************
                                        ;TEST 7     0 1 SHIFTED BY 3 = 0 10  PS = 0
                                        ;*****************************************************************

001506  010701                          SCOPE
001510  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
001514  012701  000001                  MOV     #1,%0+1         ;LOAD R0+1 WITH 1
001520  000241                          CLC
001522  073027  000003                  ASHC    #3,%0           ;SHIFT R0,R0+1 BY 3
001526  013767  177776  013214          MOV     @#PS,PSW        ;SAVE PS
001534  122767  000000  013206          CMPB    #0,PSW          ;IS THE PS 0?
001542  001401                          BEQ     .+4
001544  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
001546  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
001552  001401                          BEQ     .+4
001554  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
001556  022701  000010                  CMP     #10,%0+1        ;IS THE RESULT 10?
001562  001401                          BEQ     .+4
001564  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 10

                                        ;*****************************************************************
                                        ;TEST 10     0 1 SHIFTED BY 4 = 0 20  PS = 0
                                        ;*****************************************************************

001566  010701                          SCOPE
001570  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
001574  012701  000001                  MOV     #1,%0+1         ;LOAD R0+1 WITH 1
001600  000241                          CLC
001602  073027  000004                  ASHC    #4,%0           ;SHIFT R0,R0+1 BY 4
001606  013767  177776  013134          MOV     @#PS,PSW        ;SAVE PS
001614  122767  000000  013126          CMPB    #0,PSW          ;IS THE PS 0?
001622  001401                          BEQ     .+4
001624  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
001626  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
001632  001401                          BEQ     .+4
001634  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
001636  022701  000020                  CMP     #20,%0+1        ;IS THE RESULT 20?
001642  001401                          BEQ     .+4
001644  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 20
```

```
                                        ;*****************************************************************
                                        ;TEST 11     0 1 SHIFTED BY 5 = 0 40  PS = 0
                                        ;*****************************************************************

001646  010701                          SCOPE
001650  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
001654  012701  000001                  MOV     #1,%0+1         ;LOAD R0+1 WITH 1
001660  000241                          CLC
001662  073027  000005                  ASHC    #5,%0           ;SHIFT R0,R0+1 BY 5
001666  013767  177776  013054          MOV     @#PS,PSW        ;SAVE PS
001674  122767  000000  013046          CMPB    #0,PSW          ;IS THE PS 0?
001702  001401                          BEQ     .+4
001704  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
001706  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
001712  001401                          BEQ     .+4
001714  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
001716  022701  000040                  CMP     #40,%0+1        ;IS THE RESULT 40?
001722  001401                          BEQ     .+4
001724  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 40

                                        ;*****************************************************************
                                        ;TEST 12     0 1 SHIFTED BY 6 = 0 100  PS = 0
                                        ;*****************************************************************

001726  010701                          SCOPE
001730  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
001734  012701  000001                  MOV     #1,%0+1         ;LOAD R0+1 WITH 1
001740  000241                          CLC
001742  073027  000006                  ASHC    #6,%0           ;SHIFT R0,R0+1 BY 6
001746  013767  177776  012774          MOV     @#PS,PSW        ;SAVE PS
001754  122767  000000  012766          CMPB    #0,PSW          ;IS THE PS 0?
001762  001401                          BEQ     .+4
001764  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
001766  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
001772  001401                          BEQ     .+4
001774  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
001776  022701  000100                  CMP     #100,%0+1       ;IS THE RESULT 100?
002002  001401                          BEQ     .+4
002004  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 100
```

```
                                ;*****************************************************************
                                ;TEST 13     0 1 SHIFTED BY 7 = 0 200  PS = 0
                                ;*****************************************************************

002006  010701                          SCOPE
002010  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
002014  012701  000001                  MOV     #1,%0+1         ;LOAD R0+1 WITH 1
002020  000241                          CLC
002022  073027  000007                  ASHC    #7,%0           ;SHIFT R0,R0+1 BY 7
002026  013767  177776  012714          MOV     @#PS,PSW        ;SAVE PS
002034  122767  000000  012706          CMPB    #0,PSW          ;IS THE PS 0?
002042  001401                          BEQ     .+4
002044  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002046  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
002052  001401                          BEQ     .+4
002054  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
002056  022701  000200                  CMP     #200,%0+1       ;IS THE RESULT 200?
002062  001401                          BEQ     .+4
002064  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 200

                                ;*****************************************************************
                                ;TEST 14     0 1 SHIFTED BY 10 = 0 400  PS = 0
                                ;*****************************************************************

002066  010701                          SCOPE
002070  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
002074  012701  000001                  MOV     #1,%0+1         ;LOAD R0+1 WITH 1
002100  000241                          CLC
002102  073027  000010                  ASHC    #10,%0          ;SHIFT R0,R0+1 BY 10
002106  013767  177776  012634          MOV     @#PS,PSW        ;SAVE PS
002114  122767  000000  012626          CMPB    #0,PSW          ;IS THE PS 0?
002122  001401                          BEQ     .+4
002124  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002126  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
002132  001401                          BEQ     .+4
002134  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
002136  022701  000400                  CMP     #400,%0+1       ;IS THE RESULT 400?
002142  001401                          BEQ     .+4
002144  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 400
```

```
                                ;*****************************************************************
                                ;TEST 15     0 1 SHIFTED BY 11 = 0 1000  PS = 0
                                ;*****************************************************************

002146  010701                          SCOPE
002150  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
002154  012701  000001                  MOV     #1,%0!1         ;LOAD R0!1 WITH 1
002160  000241                          CLC
002162  073027  000011                  ASHC    #11,%0          ;SHIFT R0,R0!1 BY 11
002166  013767  177776  012554          MOV     @#PS,PSW        ;SAVE PS
002174  122767  000000  012546          CMPB    #0,PSW          ;IS THE PS 0?
002202  001401                          BEQ     .+4
002204  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002206  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
002212  001401                          BEQ     .+4
002214  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
002216  022701  001000                  CMP     #1000,%0!1      ;IS THE RESULT 1000?
002222  001401                          BEQ     .+4
002224  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 1000

                                ;*****************************************************************
                                ;TEST 16     0 1 SHIFTED BY 12 = 0 2000  PS = 0
                                ;*****************************************************************

002226  010701                          SCOPE
002230  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
002234  012701  000001                  MOV     #1,%0!1         ;LOAD R0!1 WITH 1
002240  000241                          CLC
002242  073027  000012                  ASHC    #12,%0          ;SHIFT R0,R0!1 BY 12
002246  013767  177776  012474          MOV     @#PS,PSW        ;SAVE PS
002254  122767  000000  012466          CMPB    #0,PSW          ;IS THE PS 0?
002262  001401                          BEQ     .+4
002264  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002266  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
002272  001401                          BEQ     .+4
002274  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
002276  022701  002000                  CMP     #2000,%0!1      ;IS THE RESULT 2000?
002302  001401                          BEQ     .+4
002304  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 2000
```

```
                                ;*****************************************************************
                                ;TEST 17     0 1 SHIFTED BY 13 = 0 4000  PS = 0
                                ;*****************************************************************

002306  010701                          SCOPE
002310  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
002314  012701  000001                  MOV     #1,%0!1         ;LOAD R0!1 WITH 1
002320  000241                          CLC
002322  073027  000013                  ASHC    #13,%0          ;SHIFT R0,R0!1 BY 13
002326  013767  177776  012414          MOV     @#PS,PSW        ;SAVE PS
002334  122767  000000  012406          CMPB    #0,PSW          ;IS THE PS 0?
002342  001401                          BEQ     .+4
002344  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002346  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
002352  001401                          BEQ     .+4
002354  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
002356  022701  004000                  CMP     #4000,%0!1      ;IS THE RESULT 4000?
002362  001401                          BEQ     .+4
002364  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 4000

                                ;*****************************************************************
                                ;TEST 20     0 1 SHIFTED BY 14 = 0 10000  PS = 0
                                ;*****************************************************************

002366  010701                          SCOPE
002370  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
002374  012701  000001                  MOV     #1,%0!1         ;LOAD R0!1 WITH 1
002400  000241                          CLC
002402  073027  000014                  ASHC    #14,%0          ;SHIFT R0,R0!1 BY 14
002406  013767  177776  012334          MOV     @#PS,PSW        ;SAVE PS
002414  122767  000000  012326          CMPB    #0,PSW          ;IS THE PS 0?
002422  001401                          BEQ     .+4
002424  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002426  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
002432  001401                          BEQ     .+4
002434  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
002436  022701  010000                  CMP     #10000,%0!1     ;IS THE RESULT 10000?
002442  001401                          BEQ     .+4
002444  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 10000
```

```
                                ;*****************************************************************
                                ;TEST 21     0 1 SHIFTED BY 15 = 0 20000  PS = 0
                                ;*****************************************************************

002446  010701                          SCOPE
002450  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
002454  012701  000001                  MOV     #1,%0+1         ;LOAD R0+1 WITH 1
002460  000241                          CLC
002462  073027  000015                  ASHC    #15,%0          ;SHIFT R0,R0+1 BY 15
002466  013767  177776  012254          MOV     @#PS,PSW        ;SAVE PS
002474  122767  000000  012246          CMPB    #0,PSW          ;IS THE PS 0?
002502  001401                          BEQ     .+4
002504  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002506  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
002512  001401                          BEQ     .+4
002514  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
002516  022701  020000                  CMP     #20000,%0+1     ;IS THE RESULT 20000?
002522  001401                          BEQ     .+4
002524  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 20000

                                ;*****************************************************************
                                ;TEST 22     0 1 SHIFTED BY 16 = 0 40000  PS = 0
                                ;*****************************************************************

002526  010701                          SCOPE
002530  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
002534  012701  000001                  MOV     #1,%0+1         ;LOAD R0+1 WITH 1
002540  000241                          CLC
002542  073027  000016                  ASHC    #16,%0          ;SHIFT R0,R0+1 BY 16
002546  013767  177776  012174          MOV     @#PS,PSW        ;SAVE PS
002554  122767  000000  012166          CMPB    #0,PSW          ;IS THE PS 0?
002562  001401                          BEQ     .+4
002564  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002566  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
002572  001401                          BEQ     .+4
002574  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
002576  022701  040000                  CMP     #40000,%0+1     ;IS THE RESULT 40000?
002602  001401                          BEQ     .+4
002604  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 40000
```

```
                                ;*****************************************************************
                                ;TEST 23     0 1 SHIFTED BY 17 = 0 100000  PS = 0
                                ;*****************************************************************

002606  010701                          SCOPE
002610  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
002614  012701  000001                  MOV     #1,%0!1         ;LOAD R0!1 WITH 1
002620  000241                          CLC
002622  073027  000017                  ASHC    #17,%0          ;SHIFT R0,R0!1 BY 17
002626  013767  177776  012114          MOV     @#PS,PSW        ;SAVE PS
002634  122767  000000  012106          CMPB    #0,PSW          ;;IS THE PS 0?
002642  001401                          BEQ     .+4
002644  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002646  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
002652  001401                          BEQ     .+4
002654  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
002656  022701  100000                  CMP     #100000,%0!1    ;IS THE RESULT 100000?
002662  001401                          BEQ     .+4
002664  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 100000

                                ;*****************************************************************
                                ;TEST 24     0 1 SHIFTED BY 20 = 1 0  PS = 0
                                ;*****************************************************************

002666  010701                          SCOPE
002670  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
002674  012701  000001                  MOV     #1,%0!1         ;LOAD R0!1 WITH 1
002700  000241                          CLC
002702  073027  000020                  ASHC    #20,%0          ;SHIFT R0,R0!1 BY 20
002706  013767  177776  012034          MOV     @#PS,PSW        ;SAVE PS
002714  122767  000000  012026          CMPB    #0,PSW          ;;IS THE PS 0?
002722  001401                          BEQ     .+4
002724  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
002726  022700  000001                  CMP     #1,%0           ;IS THE RESULT 1?
002732  001401                          BEQ     .+4
002734  000000                          HLT                     ;R0 IS NOT EQUAL TO 1
002736  022701  000000                  CMP     #0,%0!1         ;IS THE RESULT 0?
002742  001401                          BEQ     .+4
002744  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 0
```

```
                                ;*****************************************************************
                                ;TEST 25     0 1 SHIFTED BY 21 = 2 0  PS = 0
                                ;*****************************************************************

002746  010701                          SCOPE
002750  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
002754  012701  000001                  MOV     #1,%0+1         ;LOAD R0+1 WITH 1
002760  000241                          CLC
002762  073027  000021                  ASHC    #21,%0          ;SHIFT R0,R0+1 BY 21
002766  013767  177776  011754          MOV     @#PS,PSW        ;SAVE PS
002774  122767  000000  011746          CMPB    #0,PSW          ;IS THE PS 0?
003002  001401                          BEQ     .+4
003004  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
003006  022700  000002                  CMP     #2,%0           ;IS THE RESULT 2?
003012  001401                          BEQ     .+4
003014  000000                          HLT                     ;R0 IS NOT EQUAL TO 2
003016  022701  000000                  CMP     #0,%0+1         ;IS THE RESULT 0?
003022  001401                          BEQ     .+4
003024  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 0

                                ;*****************************************************************
                                ;TEST 26     0 1 SHIFTED BY 22 = 4 0  PS = 0
                                ;*****************************************************************

003026  010701                          SCOPE
003030  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
003034  012701  000001                  MOV     #1,%0+1         ;LOAD R0+1 WITH 1
003040  000241                          CLC
003042  073027  000022                  ASHC    #22,%0          ;SHIFT R0,R0+1 BY 22
003046  013767  177776  011674          MOV     @#PS,PSW        ;SAVE PS
003054  122767  000000  011666          CMPB    #0,PSW          ;IS THE PS 0?
003062  001401                          BEQ     .+4
003064  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
003066  022700  000004                  CMP     #4,%0           ;IS THE RESULT 4?
003072  001401                          BEQ     .+4
003074  000000                          HLT                     ;R0 IS NOT EQUAL TO 4
003076  022701  000000                  CMP     #0,%0+1         ;IS THE RESULT 0?
003102  001401                          BEQ     .+4
003104  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 0
```

```
                                        ;*****************************************************************
                                        ;TEST 27     0 1 SHIFTED BY 23 = 10 0  PS = 0
                                        ;*****************************************************************

003106  010701                                  SCOPE
003110  012700  000000                          MOV     #0,%0           ;LOAD R0 WITH 0
003114  012701  000001                          MOV     #1,%0!1         ;LOAD R0!1 WITH 1
003120  000241                                  CLC
003122  073027  000023                          ASHC    #23,%0          ;SHIFT R0,R0!1 BY 23
003126  013767  177776  011614                  MOV     @#PS,PSW        ;SAVE PS
003134  122767  000000  011606                  CMPB    #0,PSW          ;IS THE PS 0?
003142  001401                                  BEQ     .+4
003144  000000                                  HLT                     ;THE PS IS NOT EQUAL TO 0
003146  022700  000010                          CMP     #10,%0          ;IS THE RESULT 10?
003152  001401                                  BEQ     .+4
003154  000000                                  HLT                     ;R0 IS NOT EQUAL TO 10
003156  022701  000020                          CMP     #0,%0!1         ;IS THE RESULT 0?
003162  001401                                  BEQ     .+4
003164  000000                                  HLT                     ;R0!1 IS NOT EQUAL TO 0

                                        ;*****************************************************************
                                        ;TEST 30     0 1 SHIFTED BY 24 = 20 0  PS = 0
                                        ;*****************************************************************

003166  010701                                  SCOPE
003170  012700  000000                          MOV     #0,%0           ;LOAD R0 WITH 0
003174  012701  000001                          MOV     #1,%0!1         ;LOAD R0!1 WITH 1
003200  000241                                  CLC
003202  073027  000024                          ASHC    #24,%0          ;SHIFT R0,R0!1 BY 24
003206  013767  177776  011534                  MOV     @#PS,PSW        ;SAVE PS
003214  122767  000000  011526                  CMPB    #0,PSW          ;IS THE PS 0?
003222  001401                                  BEQ     .+4
003224  000000                                  HLT                     ;THE PS IS NOT EQUAL TO 0
003226  022700  000020                          CMP     #20,%0          ;IS THE RESULT 20?
003232  001401                                  BEQ     .+4
003234  000000                                  HLT                     ;R0 IS NOT EQUAL TO 20
003236  022701  000000                          CMP     #0,%0!1         ;IS THE RESULT 0?
003242  001401                                  BEQ     .+4
003244  000000                                  HLT                     ;R0!1 IS NOT EQUAL TO 0
```

```
                                ;*****************************************************************
                                ;TEST 31     0 1 SHIFTED BY 25 = 40 0  PS = 0
                                ;*****************************************************************

003246  010701                          SCOPE
003250  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
003254  012701  000001                  MOV     #1,%0!1         ;LOAD R0!1 WITH 1
003260  000241                          CLC
003262  073027  000025                  ASHC    #25,%0          ;SHIFT R0,R0!1 BY 25
003266  013767  177776  011454          MOV     @#PS,PSW        ;SAVE PS
003274  122767  000000  011446          CMPB    #0,PSW          ;IS THE PS 0?
003302  001401                          BEQ     .+4
003304  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
003306  022700  000040                  CMP     #40,%0          ;IS THE RESULT 40?
003312  001401                          BEQ     .+4
003314  000000                          HLT                     ;R0 IS NOT EQUAL TO 40
003316  022701  000000                  CMP     #0,%0!1         ;IS THE RESULT 0?
003322  001401                          BEQ     .+4
003324  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 0

                                ;*****************************************************************
                                ;TEST 32     0 1 SHIFTED BY 26 = 100 0  PS = 0
                                ;*****************************************************************

003326  010701                          SCOPE
003330  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
003334  012701  000001                  MOV     #1,%0!1         ;LOAD R0!1 WITH 1
003340  000241                          CLC
003342  073027  000026                  ASHC    #26,%0          ;SHIFT R0,R0!1 BY 26
003346  013767  177776  011374          MOV     @#PS,PSW        ;SAVE PS
003354  122767  000000  011366          CMPB    #0,PSW          ;IS THE PS 0?
003362  001401                          BEQ     .+4
003364  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
003366  022700  000100                  CMP     #100,%0         ;IS THE RESULT 100?
003372  001401                          BEQ     .+4
003374  000000                          HLT                     ;R0 IS NOT EQUAL TO 100
003376  022701  000000                  CMP     #0,%0!1         ;IS THE RESULT 0?
003402  001401                          BEQ     .+4
003404  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 0
```

```
                                        ;*****************************************************************
                                        ;TEST 33     0 1 SHIFTED BY 27 = 200 0  PS = 0
                                        ;*****************************************************************

003406  010701                          SCOPE
003410  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
003414  012701  000001                  MOV     #1,%0+1         ;LOAD R0+1 WITH 1
003420  000241                          CLC
003422  073027  000027                  ASHC    #27,%0          ;SHIFT R0,R0+1 BY 27
003426  013767  177776  011314          MOV     @#PS,PSW        ;SAVE PS
003434  122767  000000  011306          CMPB    #0,PSW          ;IS THE PS 0?
003442  001401                          BEQ     .+4
003444  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
003446  022700  000200                  CMP     #200,%0         ;IS THE RESULT 200?
003452  001401                          BEQ     .+4
003454  000000                          HLT                     ;R0 IS NOT EQUAL TO 200
003456  022701  000000                  CMP     #0,%0+1         ;IS THE RESULT 0?
003462  001401                          BEQ     .+4
003464  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 0

                                        ;*****************************************************************
                                        ;TEST 34     0 1 SHIFTED BY 30 = 400 0  PS = 0
                                        ;*****************************************************************

003466  010701                          SCOPE
003470  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
003474  012701  000001                  MOV     #1,%0+1         ;LOAD R0+1 WITH 1
003500  000241                          CLC
003502  073027  000030                  ASHC    #30,%0          ;SHIFT R0,R0+1 BY 30
003506  013767  177776  011234          MOV     @#PS,PSW        ;SAVE PS
003514  122767  000000  011226          CMPB    #0,PSW          ;IS THE PS 0?
003522  001401                          BEQ     .+4
003524  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
003526  022700  000400                  CMP     #400,%0         ;IS THE RESULT 400?
003532  001401                          BEQ     .+4
003534  000000                          HLT                     ;R0 IS NOT EQUAL TO 400
003536  022701  000000                  CMP     #0,%0+1         ;IS THE RESULT 0?
003542  001401                          BEQ     .+4
003544  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 0
```

```
                                        ;*****************************************************************
                                        ;TEST 35     0 1 SHIFTED BY 31 = 1000 0  PS = 0
                                        ;*****************************************************************

003546  010701                          SCOPE
003550  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
003554  012701  000001                  MOV     #1,%0!1         ;LOAD R0!1 WITH 1
003560  000241                          CLC
003562  073027  000031                  ASHC    #31,%0          ;SHIFT R0,R0!1 BY 31
003566  013767  177776  011154          MOV     @#PS,PSW        ;SAVE PS
003574  122767  000000  011146          CMPB    #0,PSW          ;IS THE PS 0?
003602  001401                          BEQ     .+4
003604  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
003606  022700  001000                  CMP     #1000,%0        ;IS THE RESULT 1000?
003612  001401                          BEQ     .+4
003614  000000                          HLT                     ;R0 IS NOT EQUAL TO 1000
003616  022701  000000                  CMP     #0,%0!1         ;IS THE RESULT 0?
003622  001401                          BEQ     .+4
003624  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 0

                                        ;*****************************************************************
                                        ;TEST 36     0 1 SHIFTED BY 32 = 2000 0  PS = 0
                                        ;*****************************************************************

003626  010701                          SCOPE
003630  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
003634  012701  000001                  MOV     #1,%0!1         ;LOAD R0!1 WITH 1
003640  000241                          CLC
003642  073027  000032                  ASHC    #32,%0          ;SHIFT R0,R0!1 BY 32
003646  013767  177776  011074          MOV     @#PS,PSW        ;SAVE PS
003654  122767  000000  011066          CMPB    #0,PSW          ;IS THE PS 0?
003662  001401                          BEQ     .+4
003664  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
003666  022700  002000                  CMP     #2000,%0        ;IS THE RESULT 2000?
003672  001401                          BEQ     .+4
003674  000000                          HLT                     ;R0 IS NOT EQUAL TO 2000
003676  022701  000000                  CMP     #0,%0!1         ;IS THE RESULT 0?
003702  001401                          BEQ     .+4
003704  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 0
```

```
                                        ;*****************************************************************
                                        ;TEST 37     0 1 SHIFTED BY 33 = 4000 0  PS = 0
                                        ;*****************************************************************

003706  010701                          SCOPE
003710  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
003714  012701  000001                  MOV     #1,%0!1         ;LOAD R0!1 WITH 1
003720  000241                          CLC
003722  073027  000033                  ASHC    #33,%0          ;SHIFT R0,R0!1 BY 33
003726  013767  177776  011014          MOV     @#PS,PSW        ;SAVE PS
003734  122767  000000  011006          CMPB    #0,PSW          ;IS THE PS 0?
003742  001401                          BEQ     .+4
003744  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
003746  022700  004000                  CMP     #4000,%0        ;IS THE RESULT 4000?
003752  001401                          BEQ     .+4
003754  000000                          HLT                     ;R0 IS NOT EQUAL TO 4000
003756  022701  000000                  CMP     #0,%0!1         ;IS THE RESULT 0?
003762  001401                          BEQ     .+4
003764  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 0

                                        ;*****************************************************************
                                        ;TEST 40     0 1 SHIFTED BY 34 = 10000 0  PS = 0
                                        ;*****************************************************************

003766  010701                          SCOPE
003770  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
0037 4  012701  000001                  MOV     #1,%0!1         ;LOAD R0!1 WITH 1
004000  000241                          CLC
004002  073027  000034                  ASHC    #34,%0          ;SHIFT R0,R0!1 BY 34
004006  013767  177776  010734          MOV     @#PS,PSW        ;SAVE PS
004014  122767  000000  010726          CMPB    #0,PSW          ;IS THE PS 0?
004022  001401                          BEQ     .+4
004024  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
004026  022700  010000                  CMP     #10000,%0       ;IS THE RESULT 10000?
004032  001401                          BEQ     .+4
004034  000000                          HLT                     ;R0 IS NOT EQUAL TO 10000
0040 6  022701  000000                  CMP     #0,%0!1         ;IS THE RESULT 0?
0040 2  001401                          BEQ     .+4
004044  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 0
```

```
                                        ;*****************************************************************
                                        ;TEST 41     0 1 SHIFTED BY 35 = 20000 0  PS = 0
                                        ;*****************************************************************

004046  010701                          SCOPE
004050  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
004054  012701  000001                  MOV     #1,%0+1         ;LOAD R0+1 WITH 1
004060  000241                          CLC
004062  073027  000035                  ASHC    #35,%0          ;SHIFT R0,R0+1 BY 35
004066  013767  177776  010654          MOV     @#PS,PSW        ;SAVE PS
004074  122767  000000  010646          CMPB    #0,PSW          ;IS THE PS 0?
004102  001401                          BEQ     .+4
004104  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
004106  022700  020000                  CMP     #20000,%0       ;IS THE RESULT 20000?
004112  001401                          BEQ     .+4
004114  000000                          HLT                     ;R0 IS NOT EQUAL TO 20000
004116  022701  000000                  CMP     #0,%0+1         ;IS THE RESULT 0?
004122  001401                          BEQ     .+4
004124  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 0

                                        ;*****************************************************************
                                        ;TEST 42     0 1 SHIFTED BY 36 = 40000 0  PS = 0
                                        ;*****************************************************************

004126  010701                          SCOPE
004130  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
004134  012701  000001                  MOV     #1,%0+1         ;LOAD R0+1 WITH 1
004140  000241                          CLC
004142  073027  000036                  ASHC    #36,%0          ;SHIFT R0,R0+1 BY 36
004146  013767  177776  010574          MOV     @#PS,PSW        ;SAVE PS
004154  122767  000000  010566          CMPB    #0,PSW          ;IS THE PS 0?
004162  001401                          BEQ     .+4
004164  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
004166  022700  040000                  CMP     #40000,%0       ;IS THE RESULT 40000?
004172  001401                          BEQ     .+4
004174  000000                          HLT                     ;R0 IS NOT EQUAL TO 40000
004176  022701  000000                  CMP     #0,%0+1         ;IS THE RESULT 0?
004202  001401                          BEQ     .+4
004204  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 0
```

```
                                ;*****************************************************************
                                ;TEST 43     40000 0 SHIFTED BY 177762 = 1 0  PS = 0
                                ;*****************************************************************

004206  010701                          SCOPE
004210  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
004214  012701  000000                  MOV     #0,%0!1         ;LOAD R0:1 WITH 0
004220  000241                          CLC
004222  073027  177762                  ASHC    #177762,%0      ;SHIFT R0,R0:1 BY 177762
004226  013767  177776  010514          MOV     @#PS,PSW        ;SAVE PS
004234  122767  000000  010506          CMPB    #0,PSW          ;IS THE PS 0?
004242  001401                          BEQ     .+4
004244  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
004246  022700  000001                  CMP     #1,%0           ;IS THE RESULT 1?
004252  001401                          BEQ     .+4
004254  000000                          HLT                     ;R0 IS NOT EQUAL TO 1
004256  022701  000000                  CMP     #0,%0!1         ;IS THE RESULT 0?
004262  001401                          BEQ     .+4
004264  000000                          HLT                     ;R0:1 IS NOT EQUAL TO 0

                                ;*****************************************************************
                                ;TEST 44     40000 0 SHIFTED BY 177763 = 2 0  PS = 0
                                ;*****************************************************************

004266  010701                          SCOPE
004270  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
004274  012701  000000                  MOV     #0,%0!1         ;LOAD R0:1 WITH 0
004300  000241                          CLC
004302  073027  177763                  ASHC    #177763,%0      ;SHIFT R0,R0!1 BY 177763
004306  013767  177776  010434          MOV     @#PS,PSW        ;SAVE PS
004314  122767  000000  010426          CMPB    #0,PSW          ;IS THE PS 0?
004322  001401                          BEQ     .+4
004324  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
004326  022700  000002                  CMP     #2,%0           ;IS THE RESULT 2?
004332  001401                          BEQ     .+4
004334  000000                          HLT                     ;R0 IS NOT EQUAL TO 2
004336  022701  000000                  CMP     #0,%0!1         ;IS THE RESULT 0?
004342  001401                          BEQ     .+4
004344  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 0
```

```
                                ;*****************************************************************
                                ;TEST 45     40000 0 SHIFTED BY 177764 = 4 0  PS = 0
                                ;*****************************************************************

004346  010701                          SCOPE
004350  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
004354  012701  000000                  MOV     #0,%0+1         ;LOAD R0+1 WITH 0
004360  000241                          CLC
004362  073027  177764                  ASHC    #177764,%0      ;SHIFT R0,R0+1 BY 177764
004366  013767  177776  010354          MOV     @#PS,PSW        ;SAVE PS
004374  122767  000000  010346          CMPB    #0,PSW          ;IS THE PS 0?
004402  001401                          BEQ     .+4
004404  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
004406  022700  000004                  CMP     #4,%0           ;IS THE RESULT 4?
004412  001401                          BEQ     .+4
004414  000000                          HLT                     ;R0 IS NOT EQUAL TO 4
004416  022701  000000                  CMP     #0,%0+1         ;IS THE RESULT 0?
004422  001401                          BEQ     .+4
004424  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 0

                                ;*****************************************************************
                                ;TEST 46     40000 0 SHIFTED BY 177765 = 10 0  PS = 0
                                ;*****************************************************************

004426  010701                          SCOPE
004430  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
004434  012701  000000                  MOV     #0,%0+1         ;LOAD R0+1 WITH 0
004440  000241                          CLC
004442  073027  177765                  ASHC    #177765,%0      ;SHIFT R0,R0+1 BY 177765
004446  013767  177776  010274          MOV     @#PS,PSW        ;SAVE PS
004454  122767  000000  010266          CMPB    #0,PSW          ;IS THE PS 0?
004462  001401                          BEQ     .+4
004464  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
004466  022700  000010                  CMP     #10,%0          ;IS THE RESULT 10?
004472  001401                          BEQ     .+4
004474  000000                          HLT                     ;R0 IS NOT EQUAL TO 10
004476  022701  000000                  CMP     #0,%0+1         ;IS THE RESULT 0?
004502  001401                          BEQ     .+4
004504  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 0
```

```
                                        ;*****************************************************************
                                        ;TEST 47     40000 0 SHIFTED BY 177766 = 20 0  PS = 0
                                        ;*****************************************************************

004506  010701                                  SCOPE
004510  012700  040000                          MOV     #40000,%0       ;LOAD R0 WITH 40000
004514  012701  000000                          MOV     #0,%0!1         ;LOAD R0!1 WITH 0
004520  000241                                  CLC
004522  073027  177766                          ASHC    #177766,%0      ;SHIFT R0,R0!1 BY 177766
004526  013767  177776  010214                  MOV     @#PS,PSW        ;SAVE PS
004534  122767  000000  010206                  CMPB    #0,PSW          ;IS THE PS 0?
004542  001401                                  BEQ     .+4
004544  000000                                  HLT                     ;THE PS IS NOT EQUAL TO 0
004546  022700  000020                          CMP     #20,%0          ;IS THE RESULT 20?
004552  001401                                  BEQ     .+4
004554  000000                                  HLT                     ;R0 IS NOT EQUAL TO 20
004556  022701  000000                          CMP     #0,%0!1         ;IS THE RESULT 0?
004562  001401                                  BEQ     .+4
004564  000000                                  HLT                     ;R0!1 IS NOT EQUAL TO 0

                                        ;*****************************************************************
                                        ;TEST 50     40000 0 SHIFTED BY 177767 = 40 0  PS = 0
                                        ;*****************************************************************

004566  010701                                  SCOPE
004570  012700  040000                          MOV     #40000,%0       ;LOAD R0 WITH 40000
004574  012701  000000                          MOV     #0,%0!1         ;LOAD R0!1 WITH 0
004600  000241                                  CLC
004602  073027  177767                          ASHC    #177767,%0      ;SHIFT R0,R0!1 BY 177767
004606  013767  177776  010134                  MOV     @#PS,PSW        ;SAVE PS
004614  122767  000000  010126                  CMPB    #0,PSW          ;IS THE PS 0?
004622  001401                                  BEQ     .+4
004624  000000                                  HLT                     ;THE PS IS NOT EQUAL TO 0
004626  022700  000040                          CMP     #40,%0          ;IS THE RESULT 40?
004632  001401                                  BEQ     .+4
004634  000000                                  HLT                     ;R0 IS NOT EQUAL TO 40
004636  022701  000000                          CMP     #0,%0!1         ;IS THE RESULT 0?
004642  001401                                  BEQ     .+4
004644  000000                                  HLT                     ;R0!1 IS NOT EQUAL TO 0
```

```
                                ;*****************************************************************
                                ;TEST 51     40000 0 SHIFTED BY 177770 = 100 0  PS = 0
                                ;*****************************************************************

004646  010701                          SCOPE
004650  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
004654  012701  000000                  MOV     #0,%0+1         ;LOAD R0+1 WITH 0
004660  000241                          CLC
004662  073027  177770                  ASHC    #177770,%0      ;SHIFT R0,R0+1 BY 177770
004666  013767  177776  010054          MOV     @#PS,PSW        ;SAVE PS
004674  122767  000000  010046          CMPB    #0,PSW          ;;IS THE PS 0?
004702  001401                          BEQ     .+4
004704  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
004706  022700  000100                  CMP     #100,%0         ;;IS THE RESULT 100?
004712  001401                          BEQ     .+4
004714  000000                          HLT                     ;R0 IS NOT EQUAL TO 100
004716  022701  000000                  CMP     #0,%0+1         ;;IS THE RESULT 0?
004722  001401                          BEQ     .+4
004724  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 0

                                ;*****************************************************************
                                ;TEST 52     40000 0 SHIFTED BY 177771 = 200 0  PS = 0
                                ;*****************************************************************

004726  010701                          SCOPE
004730  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
004734  012701  000000                  MOV     #0,%0+1         ;LOAD R0+1 WITH 0
004740  000241                          CLC
004742  073027  177771                  ASHC    #177771,%0      ;SHIFT R0,R0+1 BY 177771
004746  013767  177776  007774          MOV     @#PS,PSW        ;SAVE PS
004754  122767  000000  007766          CMPB    #0,PSW          ;;IS THE PS 0?
004762  001401                          BEQ     .+4
004764  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
004766  022700  000200                  CMP     #200,%0         ;;IS THE RESULT 200?
004772  001401                          BEQ     .+4
004774  000000                          HLT                     ;R0 IS NOT EQUAL TO 200
004776  022701  000000                  CMP     #0,%0+1         ;;IS THE RESULT 0?
005002  001401                          BEQ     .+4
005004  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 0
```

```
                                        ;*****************************************************************
                                        ;TEST 53     40000 0 SHIFTED BY 177772 = 400 0  PS = 0
                                        ;*****************************************************************

005006  010701                                  SCOPE
005010  012700  040000                          MOV     #40000,%0       ;LOAD R0 WITH 40000
005014  012701  000000                          MOV     #0,%0+1         ;LOAD R0+1 WITH 0
005020  000241                                  CLC
005022  073027  177772                          ASHC    #177772,%0      ;SHIFT R0,R0+1 BY 177772
005026  013767  177776  007714                  MOV     @#PS,PSW        ;SAVE PS
005034  122767  000000  007706                  CMPB    #0,PSW          ;IS THE PS 0?
005042  001401                                  BEQ     .+4
005044  000000                                  HLT                     ;THE PS IS NOT EQUAL TO 0
005046  022700  000400                          CMP     #400,%0         ;IS THE RESULT 400?
005052  001401                                  BEQ     .+4
005054  000000                                  HLT                     ;R0 IS NOT EQUAL TO 400
005056  022701  000000                          CMP     #0,%0+1         ;IS THE RESULT 0?
005062  001401                                  BEQ     .+4
005064  000000                                  HLT                     ;R0+1 IS NOT EQUAL TO 0

                                        ;*****************************************************************
                                        ;TEST 54     40000 0 SHIFTED BY 177773 = 1000 0  PS = 0
                                        ;*****************************************************************

005066  010701                                  SCOPE
005070  012700  040000                          MOV     #40000,%0       ;LOAD R0 WITH 40000
005074  012701  000000                          MOV     #0,%0+1         ;LOAD R0+1 WITH 0
005100  000241                                  CLC
005102  073027  177773                          ASHC    #177773,%0      ;SHIFT R0,R0+1 BY 177773
005106  013767  177776  007634                  MOV     @#PS,PSW        ;SAVE PS
005114  122767  000000  007626                  CMPB    #0,PSW          ;IS THE PS 0?
005122  001401                                  BEQ     .+4
005124  000000                                  HLT                     ;THE PS IS NOT EQUAL TO 0
005126  022700  001000                          CMP     #1000,%0        ;IS THE RESULT 1000?
005132  001401                                  BEQ     .+4
005134  000000                                  HLT                     ;R0 IS NOT EQUAL TO 1000
005136  022701  000000                          CMP     #0,%0+1         ;IS THE RESULT 0?
005142  001401                                  BEQ     .+4
005144  000000                                  HLT                     ;R0+1 IS NOT EQUAL TO 0
```

```
                                ;*****************************************************************
                                ;TEST 55     40000 0 SHIFTED BY 177774 = 2000 0  PS = 0
                                ;*****************************************************************

005146  010701                          SCOPE
005150  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
005154  012701  000000                  MOV     #0,%0!1         ;LOAD R0!1 WITH 0
005160  000241                          CLC
005162  073027  177774                  ASHC    #177774,%0      ;SHIFT R0,R0!1 BY 177774
005166  013767  177776  007554          MOV     @#PS,PSW        ;SAVE PS
005174  122767  000000  007546          CMPB    #0,PSW          ;IS THE PS 0?
005202  001401                          BEQ     .+4
005204  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
005206  022700  002000                  CMP     #2000,%0        ;IS THE RESULT 2000?
005212  001401                          BEQ     .+4
005214  000000                          HLT                     ;R0 IS NOT EQUAL TO 2000
005216  022701  000000                  CMP     #0,%0!1         ;IS THE RESULT 0?
005222  001401                          BEQ     .+4
005224  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 0


                                ;*****************************************************************
                                ;TEST 56     40000 0 SHIFTED BY 177775 = 4000 0  PS = 0
                                ;*****************************************************************

005226  010701                          SCOPE
005230  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
005234  012701  000000                  MOV     #0,%0!1         ;LOAD R0!1 WITH 0
005240  000241                          CLC
005242  073027  177775                  ASHC    #177775,%0      ;SHIFT R0,R0!1 BY 177775
005246  013767  177776  007474          MOV     @#PS,PSW        ;SAVE PS
005254  122767  000000  007466          CMPB    #0,PSW          ;IS THE PS 0?
005262  001401                          BEQ     .+4
005264  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
005266  022700  004000                  CMP     #4000,%0        ;IS THE RESULT 4000?
005272  001401                          BEQ     .+4
005274  000000                          HLT                     ;R0 IS NOT EQUAL TO 4000
005276  022701  000000                  CMP     #0,%0!1         ;IS THE RESULT 0?
005302  001401                          BEQ     .+4
005304  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 0
```

```
                                ;*****************************************************************
                                ;TEST 57     40000 0 SHIFTED BY 177776 = 10000 0  PS = 0
                                ;*****************************************************************

005306  010701                          SCOPE
005310  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
005314  012701  000000                  MOV     #0,%0+1         ;LOAD R0+1 WITH 0
005320  000241                          CLC
005322  073027  177776                  ASHC    #177776,%0      ;SHIFT R0,R0+1 BY 177776
005326  013767  177776  007414          MOV     @#PS,PSW        ;SAVE PS
005334  122767  000000  007406          CMPB    #0,PSW          ;IS THE PS 0?
005342  001401                          BEQ     .+4
005344  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
005346  022700  010000                  CMP     #10000,%0       ;IS THE RESULT 10000?
005352  001401                          BEQ     .+4
005354  000000                          HLT                     ;R0 IS NOT EQUAL TO 10000
005356  022701  000000                  CMP     #0,%0+1         ;IS THE RESULT 0?
005362  001401                          BEQ     .+4
005364  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 0

                                ;*****************************************************************
                                ;TEST 60     40000 0 SHIFTED BY 177777 = 20000 0  PS = 0
                                ;*****************************************************************

005366  010701                          SCOPE
005370  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
005374  012701  000000                  MOV     #0,%0+1         ;LOAD R0+1 WITH 0
005400  000241                          CLC
005402  073027  177777                  ASHC    #177777,%0      ;SHIFT R0,R0+1 BY 177777
005406  013767  177776  007334          MOV     @#PS,PSW        ;SAVE PS
005414  122767  000000  007326          CMPB    #0,PSW          ;IS THE PS 0?
005422  001401                          BEQ     .+4
005424  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
005426  022700  020000                  CMP     #20000,%0       ;IS THE RESULT 20000?
005432  001401                          BEQ     .+4
005434  000000                          HLT                     ;R0 IS NOT EQUAL TO 20000
005436  022701  000000                  CMP     #0,%0+1         ;IS THE RESULT 0?
005442  001401                          BEQ     .+4
005444  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 0
```

```
                                ;*****************************************************************
                                ;TEST 61     40000 0 SHIFTED BY 0 = 40000 0  PS = 0
                                ;*****************************************************************

005446  010701                          SCOPE
005450  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
005454  012701  000000                  MOV     #0,%0!1         ;LOAD R0!1 WITH 0
005460  000241                          CLC
005462  073027  000000                  ASHC    #0,%0           ;SHIFT R0,R0!1 BY 0
005466  013767  177776  007254          MOV     @#PS,PSW        ;SAVE PS
005474  122767  000000  007246          CMPB    #0,PSW          ;IS THE PS 0?
005502  001401                          BEQ     .+4
005504  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
005506  022700  040000                  CMP     #40000,%0       ;IS THE RESULT 40000?
005512  001401                          BEQ     .+4
005514  000000                          HLT                     ;R0 IS NOT EQUAL TO 40000
005516  022701  000000                  CMP     #0,%0!1         ;IS THE RESULT 0?
005522  001401                          BEQ     .+4
005524  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 0

                                ;*****************************************************************
                                ;TEST 62     40000 0 SHIFTED BY 177742 = 0 1  PS = 0
                                ;*****************************************************************

005526  010701                          SCOPE
005530  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
005534  012701  000000                  MOV     #0,%0!1         ;LOAD R0!1 WITH 0
005540  000241                          CLC
005542  073027  177742                  ASHC    #177742,%0      ;SHIFT R0,R0!1 BY 177742
005546  013767  177776  007174          MOV     @#PS,PSW        ;SAVE PS
005554  122767  000000  007166          CMPB    #0,PSW          ;IS THE PS 0?
005562  001401                          BEQ     .+4
005564  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
005566  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
005572  001401                          BEQ     .+4
005574  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
005576  022701  000001                  CMP     #1,%0!1         ;IS THE RESULT 1?
005602  001401                          BEQ     .+4
005604  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 1
```

```
                                ;*****************************************************************
                                ;TEST 63     40000 0 SHIFTED BY 177743 = 0 2  PS = 0
                                ;*****************************************************************

005606  010701                          SCOPE
005610  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
005614  012701  000000                  MOV     #0,%0!1         ;LOAD R0!1 WITH 0
005620  000241                          CLC
005622  073027  177743                  ASHC    #177743,%0      ;SHIFT R0,R0!1 BY 177743
005626  013767  177776  007114          MOV     @#PS,PSW        ;SAVE PS
005634  122767  000000  007106          CMPB    #0,PSW          ;IS THE PS 0?
005642  001401                          BEQ     .+4
005644  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
005646  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
005652  001401                          BEQ     .+4
005654  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
005656  022701  000002                  CMP     #2,%0!1         ;IS THE RESULT 2?
005662  001401                          BEQ     .+4
005664  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 2


                                ;*****************************************************************
                                ;TEST 64     40000 0 SHIFTED BY 177744 = 0 4  PS = 0
                                ;*****************************************************************

005666  010701                          SCOPE
005670  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
005674  012701  000000                  MOV     #0,%0!1         ;LOAD R0!1 WITH 0
005700  000241                          CLC
005702  073027  177744                  ASHC    #177744,%0      ;SHIFT R0,R0!1 BY 177744
005706  013767  177776  007034          MOV     @#PS,PSW        ;SAVE PS
005714  122767  000000  007026          CMPB    #0,PSW          ;IS THE PS 0?
005722  001401                          BEQ     .+4
005724  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
005726  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
005732  001401                          BEQ     .+4
005734  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
005736  022701  000004                  CMP     #4,%0!1         ;IS THE RESULT 4?
005742  001401                          BEQ     .+4
005744  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 4
```

```
                                ;*****************************************************************
                                ;TEST 65     40000 0 SHIFTED BY 177745 = 0 10  PS = 0
                                ;*****************************************************************

005746  010701                          SCOPE
005750  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
005754  012701  000000                  MOV     #0,%0!1         ;LOAD R0:1 WITH 0
005760  000241                          CLC
005762  073027  177745                  ASHC    #177745,%0      ;SHIFT R0,R0!1 BY 177745
005766  013767  177776  006754          MOV     @#PS,PSW        ;SAVE PS
005774  122767  000000  006746          CMPB    #0,PSW          ;IS THE PS 0?
006002  001401                          BEQ     .+4
006004  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
006006  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
006012  001401                          BEQ     .+4
006014  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
006016  022701  000010                  CMP     #10,%0!1        ;IS THE RESULT 10?
006022  001401                          BEQ     .+4
006024  000000                          HLT                     ;R0:1 IS NOT EQUAL TO 10

                                ;*****************************************************************
                                ;TEST 66     40000 0 SHIFTED BY 177746 = 0 20  PS = 0
                                ;*****************************************************************

006026  010701                          SCOPE
006030  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
006034  012701  000000                  MOV     #0,%0!1         ;LOAD R0:1 WITH 0
006040  000241                          CLC
006042  073027  177746                  ASHC    #177746,%0      ;SHIFT R0,R0:1 BY 177746
006046  013767  177776  006674          MOV     @#PS,PSW        ;SAVE PS
006054  122767  000000  006666          CMPB    #0,PSW          ;IS THE PS 0?
006062  001401                          BEQ     .+4
006064  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
006066  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
006072  001401                          BEQ     .+4
006074  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
006076  022701  000020                  CMP     #20,%0!1        ;IS THE RESULT 20?
006102  001401                          BEQ     .+4
006104  000000                          HLT                     ;R0:1 IS NOT EQUAL TO 20
```

```
                                        ;*****************************************************************
                                        ;TEST 67     40000 0 SHIFTED BY 177747 = 0 40  PS = 0
                                        ;*****************************************************************

006106  010701                                  SCOPE
006110  012700  040000                          MOV     #40000,%0       ;LOAD R0 WITH 40000
006114  012701  000000                          MOV     #0,%0!1         ;LOAD R0!1 WITH 0
006120  000241                                  CLC
006122  073027  177747                          ASHC    #177747,%0      ;SHIFT R0,R0!1 BY 177747
006126  013767  177776  006614                  MOV     @#PS,PSW        ;SAVE PS
006134  122767  000000  006606                  CMPB    #0,PSW          ;IS THE PS 0?
006142  001401                                  BEQ     .+4
006144  000000                                  HLT                     ;THE PS IS NOT EQUAL TO 0
006146  022700  000000                          CMP     #0,%0           ;IS THE RESULT 0?
006152  001401                                  BEQ     .+4
006154  000000                                  HLT                     ;R0 IS NOT EQUAL TO 0
006156  022701  000040                          CMP     #40,%0!1        ;IS THE RESULT 40?
006162  001401                                  BEQ     .+4
006164  000000                                  HLT                     ;R0!1 IS NOT EQUAL TO 40

                                        ;*****************************************************************
                                        ;TEST 70     40000 0 SHIFTED BY 177750 = 0 100  PS = 0
                                        ;*****************************************************************

006166  010701                                  SCOPE
006170  012700  040000                          MOV     #40000,%0       ;LOAD R0 WITH 40000
006174  012701  000000                          MOV     #0,%0!1         ;LOAD R0!1 WITH 0
006200  000241                                  CLC
006202  073027  177750                          ASHC    #177750,%0      ;SHIFT R0,R0!1 BY 177750
006206  013767  177776  006534                  MOV     @#PS,PSW        ;SAVE PS
006214  122767  000000  006526                  CMPB    #0,PSW          ;IS THE PS 0?
006222  001401                                  BEQ     .+4
006224  000000                                  HLT                     ;THE PS IS NOT EQUAL TO 0
006226  022700  000000                          CMP     #0,%0           ;IS THE RESULT 0?
006232  001401                                  BEQ     .+4
006234  000000                                  HLT                     ;R0 IS NOT EQUAL TO 0
006236  022701  000100                          CMP     #100,%0!1       ;IS THE RESULT 100?
006242  001401                                  BEQ     .+4
006244  000000                                  HLT                     ;R0!1 IS NOT EQUAL TO 100
```

```
                                ;*****************************************************************
                                ;TEST 71     40000 0 SHIFTED BY 177751 = 0 200  PS = 0
                                ;*****************************************************************

006246  010701                          SCOPE
006250  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
006254  012701  000000                  MOV     #0,%0!1         ;LOAD R0!1 WITH 0
006260  000241                          CLC
006262  073027  177751                  ASHC    #177751,%0      ;SHIFT R0,R0!1 BY 177751
006266  013767  177776  006454          MOV     @#PS,PSW        ;SAVE PS
006274  122767  000000  006446          CMPB    #0,PSW          ;IS THE PS 0?
006302  001401                          BEQ     .+4
006304  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
006306  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
006312  001401                          BEQ     .+4
006314  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
006316  022701  000200                  CMP     #200,%0!1       ;IS THE RESULT 200?
006322  001401                          BEQ     .+4
006324  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 200

                                ;*****************************************************************
                                ;TEST 72     40000 0 SHIFTED BY 177752 = 0 400  PS = 0
                                ;*****************************************************************

006326  010701                          SCOPE
006330  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
006334  012701  000000                  MOV     #0,%0!1         ;LOAD R0!1 WITH 0
006340  000241                          CLC
006342  073027  177752                  ASHC    #177752,%0      ;SHIFT R0,R0!1 BY 177752
006346  013767  177776  006374          MOV     @#PS,PSW        ;SAVE PS
006354  122767  000000  006366          CMPB    #0,PSW          ;IS THE PS 0?
006362  001401                          BEQ     .+4
006364  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
006366  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
006372  001401                          BEQ     .+4
006374  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
006376  022701  000400                  CMP     #400,%0!1       ;IS THE RESULT 400?
006402  001401                          BEQ     .+4
006404  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 400
```

```
                                        ;*****************************************************************
                                        ;TEST 73     40000 0 SHIFTED BY 177753 = 0 1000  PS = 0
                                        ;*****************************************************************

006406  010701                          SCOPE
006410  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
006414  012701  000000                  MOV     #0,%0!1         ;LOAD R0!1 WITH 0
006420  000241                          CLC
006422  073027  177753                  ASHC    #177753,%0      ;SHIFT R0,R0!1 BY 177753
006426  013767  177776  006314          MOV     @#PS,PSW        ;SAVE PS
006434  122767  000000  006306          CMPB    #0,PSW          ;IS THE PS 0?
006442  001401                          BEQ     .+4
006444  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
006446  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
006452  001401                          BEQ     .+4
006454  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
006456  022701  001000                  CMP     #1000,%0!1      ;IS THE RESULT 1000?
006462  001401                          BEQ     .+4
006464  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 1000

                                        ;*****************************************************************
                                        ;TEST 74     40000 0 SHIFTED BY 177754 = 0 2000  PS = 0
                                        ;*****************************************************************

006466  010701                          SCOPE
006470  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
006474  012701  000000                  MOV     #0,%0!1         ;LOAD R0!1 WITH 0
006500  000241                          CLC
006502  073027  177754                  ASHC    #177754,%0      ;SHIFT R0,R0!1 BY 177754
006506  013767  177776  006234          MOV     @#PS,PSW        ;SAVE PS
006514  122767  000000  006226          CMPB    #0,PSW          ;IS THE PS 0?
006522  001401                          BEQ     .+4
006524  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
006526  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
006532  001401                          BEQ     .+4
006534  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
006536  022701  002000                  CMP     #2000,%0!1      ;IS THE RESULT 2000?
006542  001401                          BEQ     .+4
006544  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 2000
```

```
                                ;*****************************************************************
                                ;TEST 75     40000 0 SHIFTED BY 177755 = 0 4000  PS = 0
                                ;*****************************************************************

006546  010701                          SCOPE
006550  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
006554  012701  000000                  MOV     #0,%0!1         ;LOAD R0!1 WITH 0
006560  000241                          CLC
006562  073027  177755                  ASHC    #177755,%0      ;SHIFT R0,R0!1 BY 177755
006566  013767  177776  006154          MOV     @#PS,PSW        ;SAVE PS
006574  122767  000000  006146          CMPB    #0,PSW          ;IS THE PS 0?
006602  001401                          BEQ     .+4
006604  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
006606  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
006612  001401                          BEQ     .+4
006614  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
006616  022701  004000                  CMP     #4000,%0!1      ;IS THE RESULT 4000?
006622  001401                          BEQ     .+4
006624  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 4000

                                ;*****************************************************************
                                ;TEST 76     40000 0 SHIFTED BY 177756 = 0 10000  PS = 0
                                ;*****************************************************************

006626  010701                          SCOPE
006630  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
006634  012701  000000                  MOV     #0,%0!1         ;LOAD R0!1 WITH 0
006640  000241                          CLC
006642  073027  177756                  ASHC    #177756,%0      ;SHIFT R0,R0!1 BY 177756
006646  013767  177776  006074          MOV     @#PS,PSW        ;SAVE PS
006654  122767  000000  006066          CMPB    #0,PSW          ;IS THE PS 0?
006662  001401                          BEQ     .+4
006664  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
006666  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
006672  001401                          BEQ     .+4
006674  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
006676  022701  010000                  CMP     #10000,%0!1     ;IS THE RESULT 10000?
006702  001401                          BEQ     .+4
006704  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 10000
```

```
                                        ;*****************************************************************
                                        ;TEST 77     40000 0 SHIFTED BY 177757 = 0 20000  PS = 0
                                        ;*****************************************************************

006706  010701                                  SCOPE
006710  012700  040000                          MOV     #40000,%0       ;LOAD R0 WITH 40000
006714  012701  000000                          MOV     #0,%0!1         ;LOAD R0!1 WITH 0
006720  000241                                  CLC
006722  073027  177757                          ASHC    #177757,%0      ;SHIFT R0,R0!1 BY 177757
006726  013767  177776  006014                  MOV     @#PS,PSW        ;SAVE PS
006734  122767  000000  006006                  CMPB    #0,PSW          ;IS THE PS 0?
006742  001401                                  BEQ     .+4
006744  000000                                  HLT                     ;THE PS IS NOT EQUAL TO 0
006746  022700  000000                          CMP     #0,%0           ;IS THE RESULT 0?
006752  001401                                  BEQ     .+4
006754  000000                                  HLT                     ;R0 IS NOT EQUAL TO 0
006756  022701  020000                          CMP     #20000,%0!1     ;IS THE RESULT 20000?
006762  001401                                  BEQ     .+4
006764  000000                                  HLT                     ;R0!1 IS NOT EQUAL TO 20000

                                        ;*****************************************************************
                                        ;TEST 100    40000 0 SHIFTED BY 177760 = 0 40000  PS = 0
                                        ;*****************************************************************

006766  010701                                  SCOPE
006770  012700  040000                          MOV     #40000,%0       ;LOAD R0 WITH 40000
006774  012701  000000                          MOV     #0,%0!1         ;LOAD R0!1 WITH 0
007000  000241                                  CLC
007002  073027  177760                          ASHC    #177760,%0      ;SHIFT R0,R0!1 BY 177760
007006  013767  177776  005734                  MOV     @#PS,PSW        ;SAVE PS
007014  122767  000000  005726                  CMPB    #0,PSW          ;IS THE PS 0?
007022  001401                                  BEQ     .+4
007024  000000                                  HLT                     ;THE PS IS NOT EQUAL TO 0
007026  022700  000000                          CMP     #0,%0           ;IS THE RESULT 0?
007032  001401                                  BEQ     .+4
007034  000000                                  HLT                     ;R0 IS NOT EQUAL TO 0
007036  022701  040000                          CMP     #40000,%0!1     ;IS THE RESULT 40000?
007042  001401                                  BEQ     .+4
007044  000000                                  HLT                     ;R0!1 IS NOT EQUAL TO 40000
```

```
                                ;*****************************************************************
                                ;TEST 101     40000 0 SHIFTED BY 177761 = 0 100000  PS = 0
                                ;*****************************************************************

007046  010701                          SCOPE
007050  012700  040000                  MOV     #40000,%0       ;LOAD R0 WITH 40000
007054  012701  000000                  MOV     #0,%0!1         ;LOAD R0!1 WITH 0
007060  000241                          CLC
007062  073027  177761                  ASHC    #177761,%0      ;SHIFT R0,R0!1 BY 177761
007066  013767  177776  005654          MOV     @#PS,PSW        ;SAVE PS
007074  122767  000000  005646          CMPB    #0,PSW          ;IS THE PS 0?
007102  001401                          BEQ     .+4
007104  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
007106  022700  000000                  CMP     #0,%0           ;IS THE RESULT 0?
007112  001401                          BEQ     .+4
007114  000000                          HLT                     ;R0 IS NOT EQUAL TO 0
007116  022701  100000                  CMP     #100000,%0!1    ;IS THE RESULT 100000?
007122  001401                          BEQ     .+4
007124  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 100000

                                ;*****************************************************************
                                ;TEST 102     -1 0 SHIFTED BY -16. = -1 -1  PS = 10
                                ;*****************************************************************

007126  010701                          SCOPE
007130  012700  177777                  MOV     #-1,%0          ;LOAD R0 WITH -1
007134  012701  000000                  MOV     #0,%0!1         ;LOAD R0!1 WITH 0
007140  000241                          CLC
007142  073027  177760                  ASHC    #-16.,%0        ;SHIFT R0,R0!1 BY -16.
007146  013767  177776  005574          MOV     @#PS,PSW        ;SAVE PS
007154  122767  000010  005566          CMPB    #10,PSW         ;IS THE PS 10?
007162  001401                          BEQ     .+4
007164  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
007166  022700  177777                  CMP     #-1,%0          ;IS THE RESULT -1?
007172  001401                          BEQ     .+4
007174  000000                          HLT                     ;R0 IS NOT EQUAL TO -1
007176  022701  177777                  CMP     #-1,%0!1        ;IS THE RESULT -1?
007202  001401                          BEQ     .+4
007204  000000                          HLT                     ;R0!1 IS NOT EQUAL TO -1
```

```
                                        ;*****************************************************************
                                        ;TEST 103     125252 0 SHIFTED BY -16, = -1 125252  PS = 10
                                        ;*****************************************************************

007206  010701                                  SCOPE
007210  012700  125252                          MOV     #125252,%0      ;LOAD R0 WITH 125252
007214  012701  000000                          MOV     #0,%0+1         ;LOAD R0+1 WITH 0
007220  000241                                  CLC
007222  073027  177760                          ASHC    #-16.,%0        ;SHIFT R0,R0+1 BY -16,
007226  013767  177776  005514                  MOV     @#PS,PSW        ;SAVE PS
007234  122767  000010  005506                  CMPB    #10,PSW         ;IS THE PS 10?
007242  001401                                  BEQ     .+4
007244  000000                                  HLT                     ;THE PS IS NOT EQUAL TO 10
007246  022700  177777                          CMP     #-1,%0          ;IS THE RESULT -1?
007252  001401                                  BEQ     .+4
007254  000000                                  HLT                     ;R0 IS NOT EQUAL TO -1
007256  022701  125252                          CMP     #125252,%0+1    ;IS THE RESULT 125252?
007262  001401                                  BEQ     .+4
007264  000000                                  HLT                     ;R0+1 IS NOT EQUAL TO 125252

                                        ;*****************************************************************
                                        ;TEST 104     52525 0 SHIFTED BY -16, = 0 52525  PS = 0
                                        ;*****************************************************************

007266  010701                                  SCOPE
007270  012700  052525                          MOV     #52525,%0       ;LOAD R0 WITH 52525
007274  012701  000000                          MOV     #0,%0+1         ;LOAD R0+1 WITH 0
007300  000241                                  CLC
007302  073027  177760                          ASHC    #-16.,%0        ;SHIFT R0,R0+1 BY -16,
007306  013767  177776  005434                  MOV     @#PS,PSW        ;SAVE PS
007314  122767  000000  005426                  CMPB    #0,PSW          ;IS THE PS 0?
007322  001401                                  BEQ     .+4
007324  000000                                  HLT                     ;THE PS IS NOT EQUAL TO 0
007326  022700  000000                          CMP     #0,%0           ;IS THE RESULT 0?
007332  001401                                  BEQ     .+4
007334  000000                                  HLT                     ;R0 IS NOT EQUAL TO 0
007336  022701  052525                          CMP     #52525,%0+1     ;IS THE RESULT 52525?
007342  001401                                  BEQ     .+4
007344  000000                                  HLT                     ;R0+1 IS NOT EQUAL TO 52525
```

```
                                ;*****************************************************************
                                ;TEST 105     100000 0 SHIFTED BY -32, = -1 -1  PS = 11
                                ;*****************************************************************

007346  010701                          SCOPE
007350  012700  100000                  MOV     #100000,%0      ;LOAD R0 WITH 100000
007354  012701  000000                  MOV     #0,%0!1         ;LOAD R0:1 WITH 0
007360  000241                          CLC
007362  073027  177740                  ASHC    #-32.,%0        ;SHIFT R0,R0:1 BY -32.
007366  013767  177776  005354          MOV     @#PS,PSW        ;SAVE PS
007374  122767  000011  005346          CMPB    #11,PSW         ;IS THE PS 11?
007402  001401                          BEQ     .+4
007404  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
007406  022700  177777                  CMP     #-1,%0          ;IS THE RESULT -1?
007412  001401                          BEQ     .+4
007414  000000                          HLT                     ;R0 IS NOT EQUAL TO -1
007416  022701  177777                  CMP     #-1,%0!1        ;IS THE RESULT -1?
007422  001401                          BEQ     .+4
007424  000000                          HLT                     ;R0:1 IS NOT EQUAL TO -1

                                ;*****************************************************************
                                ;TEST 106     0 -1 SHIFTED BY 15. = 77777 100000  PS = 0
                                ;*****************************************************************

007426  010701                          SCOPE
007430  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
007434  012701  177777                  MOV     #-1,%0!1        ;LOAD R0:1 WITH -1
007440  000241                          CLC
007442  073027  000017                  ASHC    #15.,%0         ;SHIFT R0,R0:1 BY 15.
007446  013767  177776  005274          MOV     @#PS,PSW        ;SAVE PS
007454  122767  000000  005266          CMPB    #0,PSW          ;IS THE PS 0?
007462  001401                          BEQ     .+4
007464  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
007466  022700  077777                  CMP     #77777,%0       ;IS THE RESULT 77777?
007472  001401                          BEQ     .+4
007474  000000                          HLT                     ;R0 IS NOT EQUAL TO 77777
007476  022701  100000                  CMP     #100000,%0!1    ;IS THE RESULT 100000?
007502  001401                          BEQ     .+4
007504  000000                          HLT                     ;R0:1 IS NOT EQUAL TO 100000
```

```
                                        ;*****************************************************************
                                        ;TEST 107     0 -1 SHIFTED BY 16. = -1 0  PS = 12
                                        ;*****************************************************************

007506  010701                          SCOPE
007510  012700  000000                  MOV     #0,%0           ;LOAD R0 WITH 0
007514  012701  177777                  MOV     #-1,%0+1        ;LOAD R0+1 WITH -1
007520  000241                          CLC
007522  073027  000020                  ASHC    #16.,%0         ;SHIFT R0,R0+1 BY 16.
007526  013767  177776  005214          MOV     @#PS,PSW        ;SAVE PS
007534  122767  000012  005206          CMPB    #12,PSW         ;IS THE PS 12?
007542  001401                          BEQ     .+4
007544  000000                          HLT                     ;THE PS IS NOT EQUAL TO 12
007546  022700  177777                  CMP     #-1,%0          ;IS THE RESULT -1?
007552  001401                          BEQ     .+4
007554  000000                          HLT                     ;R0 IS NOT EQUAL TO -1
007556  022701  000000                  CMP     #0,%0+1         ;IS THE RESULT 0?
007562  001401                          BEQ     .+4
007564  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 0

                                        ;*****************************************************************
                                        ;TEST 110     100000 -2 SHIFTED BY 15. = 77777 0  PS = 2
                                        ;*****************************************************************

007566  010701                          SCOPE
007570  012700  100000                  MOV     #100000,%0      ;LOAD R0 WITH 100000
007574  012701  177776                  MOV     #-2,%0+1        ;LOAD R0+1 WITH -2
007600  000241                          CLC
007602  073027  000017                  ASHC    #15.,%0         ;SHIFT R0,R0+1 BY 15.
007606  013767  177776  005134          MOV     @#PS,PSW        ;SAVE PS
007614  122767  000002  005126          CMPB    #2,PSW          ;IS THE PS 2?
007622  001401                          BEQ     .+4
007624  000000                          HLT                     ;THE PS IS NOT EQUAL TO 2
007626  022700  077777                  CMP     #77777,%0       ;IS THE RESULT 77777?
007632  001401                          BEQ     .+4
007634  000000                          HLT                     ;R0 IS NOT EQUAL TO 77777
007636  022701  000000                  CMP     #0,%0+1         ;IS THE RESULT 0?
007642  001401                          BEQ     .+4
007644  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 0
```

```
                                ;*****************************************************************
                                ;TEST 111     Ø 125252 SHIFTED BY 15. = 52525 Ø  PS = Ø
                                ;*****************************************************************

007646  010701                          SCOPE
007650  012700  000000                  MOV     #Ø,%Ø           ;LOAD RØ WITH Ø
007654  012701  125252                  MOV     #125252,%Ø!1    ;LOAD RØ!1 WITH 125252
007660  000241                          CLC
007662  073027  000017                  ASHC    #15.,%Ø         ;SHIFT RØ,RØ!1 BY 15.
007666  013767  177776  005054          MOV     @#PS,PSW        ;SAVE PS
007674  122767  000000  005046          CMPB    #Ø,PSW          ;IS THE PS Ø?
007702  001401                          BEQ     .+4
007704  000000                          HLT                     ;THE PS IS NOT EQUAL TO Ø
007706  022700  052525                  CMP     #52525,%Ø       ;IS THE RESULT 52525?
007712  001401                          BEQ     .+4
007714  000000                          HLT                     ;RØ IS NOT EQUAL TO 52525
007716  022701  000000                  CMP     #Ø,%Ø!1         ;IS THE RESULT Ø?
007722  001401                          BEQ     .+4
007724  000000                          HLT                     ;RØ!1 IS NOT EQUAL TO Ø

                                ;*****************************************************************
                                ;TEST 112     Ø 125252 SHIFTED BY 16. = 125252 Ø  PS = 12
                                ;*****************************************************************

007726  010701                          SCOPE
007730  012700  000000                  MOV     #Ø,%Ø           ;LOAD RØ WITH Ø
007734  012701  125252                  MOV     #125252,%Ø!1    ;LOAD RØ!1 WITH 125252
007740  000241                          CLC
007742  073027  000020                  ASHC    #16.,%Ø         ;SHIFT RØ,RØ!1 BY 16.
007746  013767  177776  004774          MOV     @#PS,PSW        ;SAVE PS
007754  122767  000012  004766          CMPB    #12,PSW         ;IS THE PS 12?
007762  001401                          BEQ     .+4
007764  000000                          HLT                     ;THE PS IS NOT EQUAL TO 12
007766  022700  125252                  CMP     #125252,%Ø      ;IS THE RESULT 125252?
007772  001401                          BEQ     .+4
007774  000000                          HLT                     ;RØ IS NOT EQUAL TO 125252
007776  022701  000000                  CMP     #Ø,%Ø!1         ;IS THE RESULT Ø?
010002  001401                          BEQ     .+4
010004  000000                          HLT                     ;RØ!1 IS NOT EQUAL TO Ø
```

```
                                ;*****************************************************************
                                ;TEST 113     0 52525 SHIFTED BY 16. = 52525 0  PS = 0
                                ;*****************************************************************

                                        SCOPE
010006  010701                  
010010  012700  000000          
010014  012701  052525          
010020  000241                  
010022  073027  000020          
010026  013767  177776  004714  
010034  122767  000000  004706  
010042  001401                  
010044  000000                  
010046  022700  052525          
010052  001401                  
010054  000000                  
010056  022701  000000          
010062  001401                  
010064  000000                  

                                ;*****************************************************************
                                ;TEST 114     -1 0 SHIFTED BY 16. = 0 0  PS = 7
                                ;*****************************************************************

                                        SCOPE
010066  010701                  
010070  012700  177777          
010074  012701  000000          
010100  000241                  
010102  073027  000020          
010106  013767  177776  004634  
010114  122767  000007  004626  
010122  001401                  
010124  000000                  
010126  022700  000000          
010132  001401                  
010134  000000                  
010136  022701  000000          
010142  001401                  
010144  000000                  
```

```
        MOV     #0,%0           ;LOAD R0 WITH 0
        MOV     #52525,%0+1     ;LOAD R0+1 WITH 52525
        CLC
        ASHC    #16.,%0         ;SHIFT R0,R0+1 BY 16.
        MOV     @#PS,PSW        ;SAVE PS
        CMPB    #0,PSW          ;IS THE PS 0?
        BEQ     .+4
        HLT                     ;THE PS IS NOT EQUAL TO 0
        CMP     #52525,%0       ;IS THE RESULT 52525?
        BEQ     .+4
        HLT                     ;R0 IS NOT EQUAL TO 52525
        CMP     #0,%0+1         ;IS THE RESULT 0?
        BEQ     .+4
        HLT                     ;R0+1 IS NOT EQUAL TO 0
```

```
        SCOPE
        MOV     #-1,%0          ;LOAD R0 WITH -1
        MOV     #0,%0+1         ;LOAD R0+1 WITH 0
        CLC
        ASHC    #16.,%0         ;SHIFT R0,R0+1 BY 16.
        MOV     @#PS,PSW        ;SAVE PS
        CMPB    #7,PSW          ;IS THE PS 7?
        BEQ     .+4
        HLT                     ;THE PS IS NOT EQUAL TO 7
        CMP     #0,%0           ;IS THE RESULT 0?
        BEQ     .+4
        HLT                     ;R0 IS NOT EQUAL TO 0
        CMP     #0,%0+1         ;IS THE RESULT 0?
        BEQ     .+4
        HLT                     ;R0+1 IS NOT EQUAL TO 0
```

```
                                ;*****************************************************************
                                ;TEST 115     1 SHIFTED BY 8. = 400  PS = 0
                                ;*****************************************************************

010146  010701                          SCOPE
010150  012701  000000                  MOV     #DUMMY,%1       ;LOAD R1 WITH DUMMY
010154  012701  000001                  MOV     #1,%1!1         ;LOAD R1!1 WITH 1
010160  000241                          CLC
010162  073127  000010                  ASHC    #8.,%1          ;SHIFT R1,R1!1 BY 8.
010166  013767  177776  004554          MOV     @#PS,PSW        ;SAVE PS
010174  122767  000000  004546          CMPB    #0,PSW          ;IS THE PS 0?
010202  001401                          BEQ     .+4
010204  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
010206  022701  000400                  CMP     #400,%1         ;IS THE RESULT 400?
010212  001401                          BEQ     .+4
010214  000000                          HLT                     ;R1 IS NOT EQUAL TO 400

                                ;*****************************************************************
                                ;TEST 116     -1 SHIFTED BY 15. = 100000  PS = 11
                                ;*****************************************************************

010216  010701                          SCOPE
010220  012701  000000                  MOV     #DUMMY,%1       ;LOAD R1 WITH DUMMY
010224  012701  177777                  MOV     #-1,%1!1        ;LOAD R1!1 WITH -1
010230  000241                          CLC
010232  073127  000017                  ASHC    #15.,%1         ;SHIFT R1,R1!1 BY 15.
010236  013767  177776  004504          MOV     @#PS,PSW        ;SAVE PS
010244  122767  000011  004476          CMPB    #11,PSW         ;IS THE PS 11?
010252  001401                          BEQ     .+4
010254  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
010256  022701  100000                  CMP     #100000,%1      ;IS THE RESULT 100000?
010262  001401                          BEQ     .+4
010264  000000                          HLT                     ;R1 IS NOT EQUAL TO 100000
```

```
                                ;*****************************************************************
                                ;TEST 117     52525 SHIFTED BY 0 = 52525  PS = 0
                                ;*****************************************************************

010266  010701                          SCOPE
010270  012701  000000                  MOV     #DUMMY,%1       ;LOAD R1 WITH DUMMY
010274  012701  052525                  MOV     #52525,%1!1     ;LOAD R1!1 WITH 52525
010300  000241                          CLC
010302  073127  000000                  ASHC    #0,%1           ;SHIFT R1,R1!1 BY 0
010306  013767  177776  004434          MOV     @#PS,PSW        ;SAVE PS
010314  122767  000000  004426          CMPB    #0,PSW          ;IS THE PS 0?
010322  001401                          BEQ     .+4
010324  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
010326  022701  052525                  CMP     #52525,%1       ;IS THE RESULT 52525?
010332  001401                          BEQ     .+4
010334  000000                          HLT                     ;R1 IS NOT EQUAL TO 52525


                                ;*****************************************************************
                                ;TEST 120     20010 SHIFTED BY -13. = 101  PS = 0
                                ;*****************************************************************

010336  010701                          SCOPE
010340  012701  000000                  MOV     #DUMMY,%1       ;LOAD R1 WITH DUMMY
010344  012701  020010                  MOV     #20010,%1!1     ;LOAD R1!1 WITH 20010
010350  000241                          CLC
010352  073127  177763                  ASHC    #-13.,%1        ;SHIFT R1,R1!1 BY -13.
010356  013767  177776  004364          MOV     @#PS,PSW        ;SAVE PS
010364  122767  000000  004356          CMPB    #0,PSW          ;IS THE PS 0?
010372  001401                          BEQ     .+4
010374  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
010376  022701  000101                  CMP     #101,%1         ;IS THE RESULT 101?
010402  001401                          BEQ     .+4
010404  000000                          HLT                     ;R1 IS NOT EQUAL TO 101
```

```
                                ;*****************************************************************
                                ;TEST 121     -1 SHIFTED BY 16. = 0  PS = 11
                                ;*****************************************************************

010406  010701                          SCOPE
010410  012701  000000                  MOV     #DUMMY,%1       ;LOAD R1 WITH DUMMY
010414  012701  177777                  MOV     #-1,%1!1        ;LOAD R1!1 WITH -1
010420  000241                          CLC
010422  073127  000020                  ASHC    #16.,%1         ;SHIFT R1,R1!1 BY 16.
010426  013767  177776  004314          MOV     @#PS,PSW        ;SAVE PS
010434  122767  000011  004306          CMPB    #11,PSW         ;IS THE PS 11?
010442  001401                          BEQ     .+4
010444  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
010446  022701  000000                  CMP     #0,%1           ;IS THE RESULT 0?
010452  001401                          BEQ     .+4
010454  000000                          HLT                     ;R1 IS NOT EQUAL TO 0

                                ;*****************************************************************
                                ;TEST 122     1 SHIFTED BY -1 = 100000  PS = 1
                                ;*****************************************************************

010456  010701                          SCOPE
010460  012701  000000                  MOV     #DUMMY,%1       ;LOAD R1 WITH DUMMY
010464  012701  000001                  MOV     #1,%1!1         ;LOAD R1!1 WITH 1
010470  000241                          CLC
010472  073127  177777                  ASHC    #-1,%1          ;SHIFT R1,R1!1 BY -1
010476  013767  177776  004244          MOV     @#PS,PSW        ;SAVE PS
010504  122767  000001  004236          CMPB    #1,PSW          ;IS THE PS 1?
010512  001401                          BEQ     .+4
010514  000000                          HLT                     ;THE PS IS NOT EQUAL TO 1
010516  022701  100000                  CMP     #100000,%1      ;IS THE RESULT 100000?
010522  001401                          BEQ     .+4
010524  000000                          HLT                     ;R1 IS NOT EQUAL TO 100000
```

```
                                        ;*****************************************************************
                                        ;TEST 123     125252 SHIFTED BY -16, = 125252  PS = 11
                                        ;*****************************************************************

010526  010701                          SCOPE
010530  012701  000000                  MOV     #DUMMY,%1       ;LOAD R1 WITH DUMMY
010534  012701  125252                  MOV     #125252,%1!1    ;LOAD R1!1 WITH 125252
010540  000241                          CLC
010542  073127  177760                  ASHC    #-16.,%1        ;SHIFT R1,R1!1 BY -16.
010546  013767  177776  004174          MOV     @#PS,PSW        ;SAVE PS
010554  122767  000011  004166          CMPB    #11,PSW         ;IS THE PS 11?
010562  001401                          BEQ     .+4
010564  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
010566  022701  125252                  CMP     #125252,%1      ;IS THE RESULT 125252?
010572  001401                          BEQ     .+4
010574  000000                          HLT                     ;R1 IS NOT EQUAL TO 125252

                                        ;*****************************************************************
                                        ;TEST 124     -1 0 SHIFTED BY -16, = -1 -1  PS = 10
                                        ;*****************************************************************

010576  010701                          SCOPE
010600  012702  177777                  MOV     #-1,%2          ;LOAD R2 WITH -1
010604  012703  000000                  MOV     #0,%2!1         ;LOAD R2!1 WITH 0
010610  000241                          CLC
010612  073227  177760                  ASHC    #-16.,%2        ;SHIFT R2,R2!1 BY -16.
010616  013767  177776  004124          MOV     @#PS,PSW        ;SAVE PS
010624  122767  000010  004116          CMPB    #10,PSW         ;IS THE PS 10?
010632  001401                          BEQ     .+4
010634  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
010636  022702  177777                  CMP     #-1,%2          ;IS THE RESULT -1?
010642  001401                          BEQ     .+4
010644  000000                          HLT                     ;R2 IS NOT EQUAL TO -1
010646  022703  177777                  CMP     #-1,%2!1        ;IS THE RESULT -1?
010652  001401                          BEQ     .+4
010654  000000                          HLT                     ;R2!1 IS NOT EQUAL TO -1
```

```
                                ;*****************************************************************
                                ;TEST 125     125252 0 SHIFTED BY -16. = -1 125252  PS = 10
                                ;*****************************************************************

010656  010701                          SCOPE
010660  012702  125252                  MOV     #125252,%2      ;LOAD R2 WITH 125252
010664  012703  000000                  MOV     #0,%2+1         ;LOAD R2+1 WITH 0
010670  000241                          CLC
010672  073227  177760                  ASHC    #-16.,%2        ;SHIFT R2,R2+1 BY -16.
010676  013767  177776  004044          MOV     @#PS,PSW        ;SAVE PS
010704  122767  000010  004036          CMPB    #10,PSW         ;IS THE PS 10?
010712  001401                          BEQ     .+4
010714  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
010716  022702  177777                  CMP     #-1,%2          ;IS THE RESULT -1?
010722  001401                          BEQ     .+4
010724  000000                          HLT                     ;R2 IS NOT EQUAL TO -1
010726  022703  125252                  CMP     #125252,%2+1    ;IS THE RESULT 125252?
010732  001401                          BEQ     .+4
010734  000000                          HLT                     ;R2+1 IS NOT EQUAL TO 125252

                                ;*****************************************************************
                                ;TEST 126     52525 0 SHIFTED BY -16. = 0 52525  PS = 0
                                ;*****************************************************************

010736  010701                          SCOPE
010740  012702  052525                  MOV     #52525,%2       ;LOAD R2 WITH 52525
010744  012703  000000                  MOV     #0,%2+1         ;LOAD R2+1 WITH 0
010750  000241                          CLC
010752  073227  177760                  ASHC    #-16.,%2        ;SHIFT R2,R2+1 BY -16.
010756  013767  177776  003764          MOV     @#PS,PSW        ;SAVE PS
010764  122767  000000  003756          CMPB    #0,PSW          ;IS THE PS 0?
010772  001401                          BEQ     .+4
010774  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
010776  022702  000000                  CMP     #0,%2           ;IS THE RESULT 0?
011002  001401                          BEQ     .+4
011004  000000                          HLT                     ;R2 IS NOT EQUAL TO 0
011006  022703  052525                  CMP     #52525,%2+1     ;IS THE RESULT 52525?
011012  001401                          BEQ     .+4
011014  000000                          HLT                     ;R2+1 IS NOT EQUAL TO 52525
```

```
                                ;*****************************************************************
                                ;TEST 127     100000 0 SHIFTED BY -32, = -1 -1  PS = 11
                                ;*****************************************************************

011016  010701                          SCOPE
011020  012702  100000                  MOV     #100000,%2      ;LOAD R2 WITH 100000
011024  012703  000000                  MOV     #0,%2!1         ;LOAD R2!1 WITH 0
011030  000241                          CLC
011032  073227  177740                  ASHC    #-32.,%2        ;SHIFT R2,R2!1 BY -32.
011036  013767  177776  003704          MOV     @#PS,PSW        ;SAVE PS
011044  122767  000011  003676          CMPB    #11,PSW         ;IS THE PS 11?
011052  001401                          BEQ     .+4
011054  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
011056  022702  177777                  CMP     #-1,%2          ;IS THE RESULT -1?
011062  001401                          BEQ     .+4
011064  000000                          HLT                     ;R2 IS NOT EQUAL TO -1
011066  022703  177777                  CMP     #-1,%2!1        ;IS THE RESULT -1?
011072  001401                          BEQ     .+4
011074  000000                          HLT                     ;R2!1 IS NOT EQUAL TO -1


                                ;*****************************************************************
                                ;TEST 130     0 -1 SHIFTED BY 15, = 77777 100000  PS = 0
                                ;*****************************************************************

011076  010701                          SCOPE
011100  012702  000000                  MOV     #0,%2           ;LOAD R2 WITH 0
011104  012703  177777                  MOV     #-1,%2!1        ;LOAD R2!1 WITH -1
011110  000241                          CLC
011112  073227  000017                  ASHC    #15.,%2         ;SHIFT R2,R2!1 BY 15.
011116  013767  177776  003624          MOV     @#PS,PSW        ;SAVE PS
011124  122767  000000  003616          CMPB    #0,PSW          ;IS THE PS 0?
011132  001401                          BEQ     .+4
011134  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
011136  022702  077777                  CMP     #77777,%2       ;IS THE RESULT 77777?
011142  001401                          BEQ     .+4
011144  000000                          HLT                     ;R2 IS NOT EQUAL TO 77777
011146  022703  100000                  CMP     #100000,%2!1    ;IS THE RESULT 100000?
011152  001401                          BEQ     .+4
011154  000000                          HLT                     ;R2!1 IS NOT EQUAL TO 100000
```

```
                                ;*****************************************************************
                                ;TEST 131     0 -1 SHIFTED BY 16. = -1 0  PS = 12
                                ;*****************************************************************

011156  010701                          SCOPE
011160  012702  000000                  MOV     #0,%2           ;LOAD R2 WITH 0
011164  012703  177777                  MOV     #-1,%2!1        ;LOAD R2!1 WITH -1
011170  000241                          CLC
011172  073227  000020                  ASHC    #16.,%2         ;SHIFT R2,R2!1 BY 16.
011176  013767  177776  003544          MOV     @#PS,PSW        ;SAVE PS
011204  122767  000012  003536          CMPB    #12,PSW         ;IS THE PS 12?
011212  001401                          BEQ     .+4
011214  000000                          HLT                     ;THE PS IS NOT EQUAL TO 12
011216  022702  177777                  CMP     #-1,%2          ;IS THE RESULT -1?
011222  001401                          BEQ     .+4
011224  000000                          HLT                     ;R2 IS NOT EQUAL TO -1
011226  022703  000000                  CMP     #0,%2!1         ;IS THE RESULT 0?
011232  001401                          BEQ     .+4
011234  000000                          HLT                     ;R2!1 IS NOT EQUAL TO 0

                                ;*****************************************************************
                                ;TEST 132     100000 -2 SHIFTED BY 15. = 77777 0  PS = 2
                                ;*****************************************************************

011236  010701                          SCOPE
011240  012702  100000                  MOV     #100000,%2      ;LOAD R2 WITH 100000
011244  012703  177776                  MOV     #-2,%2!1        ;LOAD R2!1 WITH -2
011250  000241                          CLC
011252  073227  000017                  ASHC    #15.,%2         ;SHIFT R2,R2!1 BY 15.
011256  013767  177776  003464          MOV     @#PS,PSW        ;SAVE PS
011264  122767  000002  003456          CMPB    #2,PSW          ;IS THE PS 2?
011272  001401                          BEQ     .+4
011274  000000                          HLT                     ;THE PS IS NOT EQUAL TO 2
011276  022702  077777                  CMP     #77777,%2       ;IS THE RESULT 77777?
011302  001401                          BEQ     .+4
011304  000000                          HLT                     ;R2 IS NOT EQUAL TO 77777
011306  022703  000000                  CMP     #0,%2!1         ;IS THE RESULT 0?
011312  001401                          BEQ     .+4
011314  000000                          HLT                     ;R2!1 IS NOT EQUAL TO 0
```

```
                                ;*****************************************************************
                                ;TEST 133     0 125252 SHIFTED BY 15. = 52525 0  PS = 0
                                ;*****************************************************************

011316  010701                          SCOPE
011320  012702  000000                  MOV     #0,%2           ;LOAD R2 WITH 0
011324  012703  125252                  MOV     #125252,%211    ;LOAD R211 WITH 125252
011330  000241                          CLC
011332  073227  000017                  ASHC    #15.,%2         ;SHIFT R2,R211 BY 15.
011336  013767  177776  003404          MOV     @#PS,PSW        ;SAVE PS
011344  122767  000000  003376          CMPB    #0,PSW          ;IS THE PS 0?
011352  001401                          BEQ     .+4
011354  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
011356  022702  052525                  CMP     #52525,%2       ;IS THE RESULT 52525?
011362  001401                          BEQ     .+4
011364  000000                          HLT                     ;R2 IS NOT EQUAL TO 52525
011366  022703  000000                  CMP     #0,%211         ;IS THE RESULT 0?
011372  001401                          BEQ     .+4
011374  000000                          HLT                     ;R211 IS NOT EQUAL TO 0


                                ;*****************************************************************
                                ;TEST 134     0 125252 SHIFTED BY 16. = 125252 0  PS = 12
                                ;*****************************************************************

011376  010701                          SCOPE
011400  012702  000000                  MOV     #0,%2           ;LOAD R2 WITH 0
011404  012703  125252                  MOV     #125252,%211    ;LOAD R211 WITH 125252
011410  000241                          CLC
011412  073227  000020                  ASHC    #16.,%2         ;SHIFT R2,R211 BY 16.
011416  013767  177776  003324          MOV     @#PS,PSW        ;SAVE PS
011424  122767  000012  003316          CMPB    #12,PSW         ;IS THE PS 12?
011432  001401                          BEQ     .+4
011434  000000                          HLT                     ;THE PS IS NOT EQUAL TO 12
011436  022702  125252                  CMP     #125252,%2      ;IS THE RESULT 125252?
011442  001401                          BEQ     .+4
011444  000000                          HLT                     ;R2 IS NOT EQUAL TO 125252
011446  022703  000000                  CMP     #0,%211         ;IS THE RESULT 0?
011452  001401                          BEQ     .+4
011454  000000                          HLT                     ;R211 IS NOT EQUAL TO 0
```

```
                                ;*****************************************************************
                                ;TEST 135      0 52525 SHIFTED BY 16. = 52525 0  PS = 0
                                ;*****************************************************************

011456  010701                          SCOPE
011460  012702  000000                  MOV     #0,%2           ;LOAD R2 WITH 0
011464  012703  052525                  MOV     #52525,%2:1     ;LOAD R2:1 WITH 52525
011470  000241                          CLC
011472  073227  000020                  ASHC    #16.,%2         ;SHIFT R2,R2:1 BY 16.
011476  013767  177776  003244          MOV     @#PS,PSW        ;SAVE PS
011504  122767  000000  003236          CMPB    #0,PSW          ;IS THE PS 0?
011512  001401                          BEQ     .+4
011514  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
011516  022702  052525                  CMP     #52525,%2       ;IS THE RESULT 52525?
011522  001401                          BEQ     .+4
011524  000000                          HLT                     ;R2 IS NOT EQUAL TO 52525
011526  022703  000000                  CMP     #0,%2:1         ;IS THE RESULT 0?
011532  001401                          BEQ     .+4
011534  000000                          HLT                     ;R2:1 IS NOT EQUAL TO 0

                                ;*****************************************************************
                                ;TEST 136      -1 0 SHIFTED BY 16. = 0 0  PS = 7
                                ;*****************************************************************

011536  010701                          SCOPE
011540  012702  177777                  MOV     #-1,%2          ;LOAD R2 WITH -1
011544  012703  000000                  MOV     #0,%2:1         ;LOAD R2:1 WITH 0
011550  000241                          CLC
011552  073227  000020                  ASHC    #16.,%2         ;SHIFT R2,R2:1 BY 16.
011556  013767  177776  003164          MOV     @#PS,PSW        ;SAVE PS
011564  122767  000007  003156          CMPB    #7,PSW          ;IS THE PS 7?
011572  001401                          BEQ     .+4
011574  000000                          HLT                     ;THE PS IS NOT EQUAL TO 7
011576  022702  000000                  CMP     #0,%2           ;IS THE RESULT 0?
011602  001401                          BEQ     .+4
011604  000000                          HLT                     ;R2 IS NOT EQUAL TO 0
011606  022703  000000                  CMP     #0,%2:1         ;IS THE RESULT 0?
011612  001401                          BEQ     .+4
011614  000000                          HLT                     ;R2:1 IS NOT EQUAL TO 0
```

```
                                ;*****************************************************************
                                ;TEST 137     1 SHIFTED BY 8, = 400  PS = 0
                                ;*****************************************************************

011616  010701                          SCOPE
011620  012703  000000                  MOV     #DUMMY,%3       ;LOAD R3 WITH DUMMY
011624  012703  000001                  MOV     #1,%3!1         ;LOAD R3!1 WITH 1
011630  000241                          CLC
011632  073327  000010                  ASHC    #8.,%3          ;SHIFT R3,R3!1 BY 8.
011636  013767  177776  003104          MOV     @#PS,PSW        ;SAVE PS
011644  122767  000000  003076          CMPB    #0,PSW          ;IS THE PS 0?
011652  001401                          BEQ     .+4
011654  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
011656  022703  000400                  CMP     #400,%3         ;IS THE RESULT 400?
011662  001401                          BEQ     .+4
011664  000000                          HLT                     ;R3 IS NOT EQUAL TO 400

                                ;*****************************************************************
                                ;TEST 140     -1 SHIFTED BY 15, = 100000  PS = 11
                                ;*****************************************************************

011666  010701                          SCOPE
011670  012703  000000                  MOV     #DUMMY,%3       ;LOAD R3 WITH DUMMY
011674  012703  177777                  MOV     #-1,%3!1        ;LOAD R3!1 WITH -1
011700  000241                          CLC
011702  073327  000017                  ASHC    #15.,%3         ;SHIFT R3,R3!1 BY 15.
011706  013767  177776  003034          MOV     @#PS,PSW        ;SAVE PS
011714  122767  000011  003026          CMPB    #11,PSW         ;IS THE PS 11?
011722  001401                          BEQ     .+4
011724  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
011726  022703  100000                  CMP     #100000,%3      ;IS THE RESULT 100000?
011732  001401                          BEQ     .+4
011734  000000                          HLT                     ;R3 IS NOT EQUAL TO 100000
```

```
                                        ;*****************************************************************
                                        ;TEST 141     52525 SHIFTED BY 0 = 52525  PS = 0
                                        ;*****************************************************************

011736  010701                                  SCOPE
011740  012703  000000                          MOV     #DUMMY,%3       ;LOAD R3 WITH DUMMY
011744  012703  052525                          MOV     #52525,%3!1     ;LOAD R3:1 WITH 52525
011750  000241                                  CLC
011752  073327  000000                          ASHC    #0,%3           ;SHIFT R3,R3:1 BY 0
011756  013767  177776  002764                  MOV     @#PS,PSW        ;SAVE PS
011764  122767  000000  002756                  CMPB    #0,PSW          ;IS THE PS 0?
011772  001401                                  BEQ     .+4
011774  000000                                  HLT                     ;THE PS IS NOT EQUAL TO 0
011776  022703  052525                          CMP     #52525,%3       ;IS THE RESULT 52525?
012002  001401                                  BEQ     .+4
012004  000000                                  HLT                     ;R3 IS NOT EQUAL TO 52525

                                        ;*****************************************************************
                                        ;TEST 142     20010 SHIFTED BY -13, = 101  PS = 0
                                        ;*****************************************************************

012006  010701                                  SCOPE
012010  012703  000000                          MOV     #DUMMY,%3       ;LOAD R3 WITH DUMMY
012014  012703  020010                          MOV     #20010,%3!1     ;LOAD R3:1 WITH 20010
012020  000241                                  CLC
012022  073327  177763                          ASHC    #-13.,%3        ;SHIFT R3,R3:1 BY -13.
012026  013767  177776  002714                  MOV     @#PS,PSW        ;SAVE PS
012034  122767  000000  002706                  CMPB    #0,PSW          ;IS THE PS 0?
012042  001401                                  BEQ     .+4
012044  000000                                  HLT                     ;THE PS IS NOT EQUAL TO 0
012046  022703  000101                          CMP     #101,%3         ;IS THE RESULT 101?
012052  001401                                  BEQ     .+4
012054  000000                                  HLT                     ;R3 IS NOT EQUAL TO 101
```

```
                                        ;*****************************************************************
                                        ;TEST 143     -1 SHIFTED BY 16. = 0  PS = 11
                                        ;*****************************************************************

012056  010701                                  SCOPE
012060  012703  000000                          MOV     #DUMMY,%3       ;LOAD R3 WITH DUMMY
012064  012703  177777                          MOV     #-1,%3!1        ;LOAD R3!1 WITH -1
012070  000241                                  CLC
012072  073327  000020                          ASHC    #16.,%3         ;SHIFT R3,R3!1 BY 16.
012076  013767  177776  002644                  MOV     @#PS,PSW        ;SAVE PS
012104  122767  000011  002636                  CMPB    #11,PSW         ;IS THE PS 11?
012112  001401                                  BEQ     .+4
012114  000000                                  HLT                     ;THE PS IS NOT EQUAL TO 11
012116  022703  000000                          CMP     #0,%3           ;IS THE RESULT 0?
012122  001401                                  BEQ     .+4
012124  000000                                  HLT                     ;R3 IS NOT EQUAL TO 0

                                        ;*****************************************************************
                                        ;TEST 144     1 SHIFTED BY -1 = 100000  PS = 1
                                        ;*****************************************************************

012126  010701                                  SCOPE
012130  012703  000000                          MOV     #DUMMY,%3       ;LOAD R3 WITH DUMMY
012134  012703  000001                          MOV     #1,%3!1         ;LOAD R3!1 WITH 1
012140  000241                                  CLC
012142  073327  177777                          ASHC    #-1,%3          ;SHIFT R3,R3!1 BY -1
012146  013767  177776  002574                  MOV     @#PS,PSW        ;SAVE PS
012154  122767  000001  002566                  CMPB    #1,PSW          ;IS THE PS 1?
012162  001401                                  BEQ     .+4
012164  000000                                  HLT                     ;THE PS IS NOT EQUAL TO 1
012166  022703  100000                          CMP     #100000,%3      ;IS THE RESULT 100000?
012172  001401                                  BEQ     .+4
012174  000000                                  HLT                     ;R3 IS NOT EQUAL TO 100000
```

```
                                ;*****************************************************************
                                ;TEST 145     125252 SHIFTED BY -16, = 125252  PS = 11
                                ;*****************************************************************

012176  010701                          SCOPE
012200  012703  000000                  MOV     #DUMMY,%3       ;LOAD R3 WITH DUMMY
012204  012703  125252                  MOV     #125252,%3!1    ;LOAD R3!1 WITH 125252
012210  000241                          CLC
012212  073327  177760                  ASHC    #-16.,%3        ;SHIFT R3,R3!1 BY -16.
012216  013767  177776  002524          MOV     @#PS,PSW        ;SAVE PS
012224  122767  000011  002516          CMPB    #11,PSW         ;IS THE PS 11?
012232  001401                          BEQ     .+4
012234  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
012236  022703  125252                  CMP     #125252,%3      ;IS THE RESULT 125252?
012242  001401                          BEQ     .+4
012244  000000                          HLT                     ;R3 IS NOT EQUAL TO 125252

                                ;*****************************************************************
                                ;TEST 146     -1 0 SHIFTED BY -16, = -1 -1  PS = 10
                                ;*****************************************************************

012246  010701                          SCOPE
012250  012704  177777                  MOV     #-1,%4          ;LOAD R4 WITH -1
012254  012705  000000                  MOV     #0,%4!1         ;LOAD R4!1 WITH 0
012260  000241                          CLC
012262  073427  177760                  ASHC    #-16.,%4        ;SHIFT R4,R4!1 BY -16.
012266  013767  177776  002454          MOV     @#PS,PSW        ;SAVE PS
012274  122767  000010  002446          CMPB    #10,PSW         ;IS THE PS 10?
012302  001401                          BEQ     .+4
012304  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
012306  022704  177777                  CMP     #-1,%4          ;IS THE RESULT -1?
012312  001401                          BEQ     .+4
012314  000000                          HLT                     ;R4 IS NOT EQUAL TO -1
012316  022705  177777                  CMP     #-1,%4!1        ;IS THE RESULT -1?
012322  001401                          BEQ     .+4
012324  000000                          HLT                     ;R4!1 IS NOT EQUAL TO -1
```

```
                                ;*****************************************************************
                                ;TEST 147     125252 0 SHIFTED BY -16, = -1 125252  PS = 10
                                ;*****************************************************************

012326  010701                          SCOPE
012330  012704  125252                  MOV     #125252,%4      ;LOAD R4 WITH 125252
012334  012705  000000                  MOV     #0,%4+1         ;LOAD R4+1 WITH 0
012340  000241                          CLC
012342  073427  177760                  ASHC    #-16.,%4        ;SHIFT R4,R4+1 BY -16.
012346  013767  177776  002374          MOV     @#PS,PSW        ;SAVE PS
012354  122767  000010  002366          CMPB    #10;PSW         ;IS THE PS 10?
012362  001401                          BEQ     .+4
012364  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
012366  022704  177777                  CMP     #-1,%4          ;IS THE RESULT -1?
012372  001401                          BEQ     .+4
012374  000000                          HLT                     ;R4 IS NOT EQUAL TO -1
012376  022705  125252                  CMP     #125252,%4+1    ;IS THE RESULT 125252?
012402  001401                          BEQ     .+4
012404  000000                          HLT                     ;R4+1 IS NOT EQUAL TO 125252

                                ;*****************************************************************
                                ;TEST 150     52525 0 SHIFTED BY -16, = 0 52525  PS = 0
                                ;*****************************************************************

012406  010701                          SCOPE
012410  012704  052525                  MOV     #52525,%4       ;LOAD R4 WITH 52525
012414  012705  000000                  MOV     #0,%4+1         ;LOAD R4+1 WITH 0
012420  000241                          CLC
012422  073427  177760                  ASHC    #-16.,%4        ;SHIFT R4,R4+1 BY -16.
012426  013767  177776  002314          MOV     @#PS,PSW        ;SAVE PS
012434  122767  000000  002306          CMPB    #0,PSW          ;IS THE PS 0?
012442  001401                          BEQ     .+4
012444  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
012446  022704  000000                  CMP     #0,%4           ;IS THE RESULT 0?
012452  001401                          BEQ     .+4
012454  000000                          HLT                     ;R4 IS NOT EQUAL TO 0
012456  022705  052525                  CMP     #52525,%4+1     ;IS THE RESULT 52525?
012462  001401                          BEQ     .+4
012464  000000                          HLT                     ;R4+1 IS NOT EQUAL TO 52525
```

```
                                ;*****************************************************************
                                ;TEST 151     100000 0 SHIFTED BY -32, = -1 -1  PS = 11
                                ;*****************************************************************

012466  010701                          SCOPE
012470  012704  100000                  MOV     #100000,%4      ;LOAD R4 WITH 100000
012474  012705  000000                  MOV     #0,%4!1         ;LOAD R4!1 WITH 0
012500  000241                          CLC
012502  073427  177740                  ASHC    #-32.,%4        ;SHIFT R4,R4!1 BY -32.
012506  013767  177776  002234          MOV     @#PS,PSW        ;SAVE PS
012514  122767  000011  002226          CMPB    #11,PSW         ;IS THE PS 11?
012522  001401                          BEQ     .+4
012524  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
012526  022704  177777                  CMP     #-1,%4          ;IS THE RESULT -1?
012532  001401                          BEQ     .+4
012534  000000                          HLT                     ;R4 IS NOT EQUAL TO -1
012536  022705  177777                  CMP     #-1,%4!1        ;IS THE RESULT -1?
012542  001401                          BEQ     .+4
012544  000000                          HLT                     ;R4!1 IS NOT EQUAL TO -1

                                ;*****************************************************************
                                ;TEST 152     0 -1 SHIFTED BY 15. = 77777 100000  PS = 0
                                ;*****************************************************************

012546  010701                          SCOPE
012550  012704  000000                  MOV     #0,%4           ;LOAD R4 WITH 0
012554  012705  177777                  MOV     #-1,%4!1        ;LOAD R4!1 WITH -1
012560  000241                          CLC
012562  073427  000017                  ASHC    #15.,%4         ;SHIFT R4,R4!1 BY 15.
012566  013767  177776  002154          MOV     @#PS,PSW        ;SAVE PS
012574  122767  000000  002146          CMPB    #0,PSW          ;IS THE PS 0?
012602  001401                          BEQ     .+4
012604  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
012606  022704  077777                  CMP     #77777,%4       ;IS THE RESULT 77777?
012612  001401                          BEQ     .+4
012614  000000                          HLT                     ;R4 IS NOT EQUAL TO 77777
012616  022705  100000                  CMP     #100000,%4!1    ;IS THE RESULT 100000?
012622  001401                          BEQ     .+4
012624  000000                          HLT                     ;R4!1 IS NOT EQUAL TO 100000
```

```
                                ;*****************************************************************
                                ;TEST 153     0 -1 SHIFTED BY 16. = -1 0  PS = 12
                                ;*****************************************************************

012626  010701                          SCOPE
012630  012704  000000                  MOV     #0,%4           ;LOAD R4 WITH 0
012634  012705  177777                  MOV     #-1,%4+1        ;LOAD R4+1 WITH -1
012640  000241                          CLC
012642  073427  000020                  ASHC    #16.,%4         ;SHIFT R4,R4+1 BY 16.
012646  013767  177776  002074          MOV     @#PS,PSW        ;SAVE PS
012654  122767  000012  002066          CMPB    #12,PSW         ;IS THE PS 12?
012662  001401                          BEQ     .+4
012664  000000                          HLT                     ;THE PS IS NOT EQUAL TO 12
012666  022704  177777                  CMP     #-1,%4          ;IS THE RESULT -1?
012672  001401                          BEQ     .+4
012674  000000                          HLT                     ;R4 IS NOT EQUAL TO -1
012676  022705  000000                  CMP     #0,%4+1         ;IS THE RESULT 0?
012702  001401                          BEQ     .+4
012704  000000                          HLT                     ;R4+1 IS NOT EQUAL TO 0

                                ;*****************************************************************
                                ;TEST 154     100000 -2 SHIFTED BY 15. = 77777 0  PS = 2
                                ;*****************************************************************

012706  010701                          SCOPE
012710  012704  100000                  MOV     #100000,%4      ;LOAD R4 WITH 100000
012714  012705  177776                  MOV     #-2,%4+1        ;LOAD R4+1 WITH -2
012720  000241                          CLC
012722  073427  000017                  ASHC    #15.,%4         ;SHIFT R4,R4+1 BY 15.
012726  013767  177776  002014          MOV     @#PS,PSW        ;SAVE PS
012734  122767  000002  002006          CMPB    #2,PSW          ;IS THE PS 2?
012742  001401                          BEQ     .+4
012744  000000                          HLT                     ;THE PS IS NOT EQUAL TO 2
012746  022704  077777                  CMP     #77777,%4       ;IS THE RESULT 77777?
012752  001401                          BEQ     .+4
012754  000000                          HLT                     ;R4 IS NOT EQUAL TO 77777
012756  022705  000000                  CMP     #0,%4+1         ;IS THE RESULT 0?
012762  001401                          BEQ     .+4
012764  000000                          HLT                     ;R4+1 IS NOT EQUAL TO 0
```

```
                                ;*****************************************************************
                                ;TEST 155     0 125252 SHIFTED BY 15. = 52525 0  PS = 0
                                ;*****************************************************************

012766  010701                          SCOPE
012770  012704  000000                  MOV     #0,%4           ;LOAD R4 WITH 0
012774  012705  125252                  MOV     #125252,%4!1    ;LOAD R4!1 WITH 125252
013000  000241                          CLC
013002  073427  000017                  ASHC    #15.,%4         ;SHIFT R4,R4!1 BY 15.
013006  013767  177776  001734          MOV     @#PS,PSW        ;SAVE PS
013014  122767  000000  001726          CMPB    #0,PSW          ;IS THE PS 0?
013022  001401                          BEQ     .+4
013024  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
013026  022704  052525                  CMP     #52525,%4       ;IS THE RESULT 52525?
013032  001401                          BEQ     .+4
013034  000000                          HLT                     ;R4 IS NOT EQUAL TO 52525
013036  022705  000000                  CMP     #0,%4!1         ;IS THE RESULT 0?
013042  001401                          BEQ     .+4
013044  000000                          HLT                     ;R4!1 IS NOT EQUAL TO 0

                                ;*****************************************************************
                                ;TEST 156     0 125252 SHIFTED BY 16. = 125252 0  PS = 12
                                ;*****************************************************************

013046  010701                          SCOPE
013050  012704  000000                  MOV     #0,%4           ;LOAD R4 WITH 0
013054  012705  125252                  MOV     #125252,%4!1    ;LOAD R4!1 WITH 125252
013060  000241                          CLC
013062  073427  000020                  ASHC    #16.,%4         ;SHIFT R4,R4!1 BY 16.
013066  013767  177776  001654          MOV     @#PS,PSW        ;SAVE PS
013074  122767  000012  001646          CMPB    #12,PSW         ;IS THE PS 12?
013102  001401                          BEQ     .+4
013104  000000                          HLT                     ;THE PS IS NOT EQUAL TO 12
013106  022704  125252                  CMP     #125252,%4      ;IS THE RESULT 125252?
013112  001401                          BEQ     .+4
013114  000000                          HLT                     ;R4 IS NOT EQUAL TO 125252
013116  022705  000000                  CMP     #0,%4!1         ;IS THE RESULT 0?
013122  001401                          BEQ     .+4
013124  000000                          HLT                     ;R4!1 IS NOT EQUAL TO 0
```

```
                                ;*****************************************************************
                                ;TEST 157     0 52525 SHIFTED BY 16. = 52525 0  PS = 0
                                ;*****************************************************************

013126  010701                          SCOPE
013130  012704  000000                  MOV     #0,%4           ;LOAD R4 WITH 0
013134  012705  052525                  MOV     #52525,%4!1     ;LOAD R4!1 WITH 52525
013140  000241                          CLC
013142  073427  000020                  ASHC    #16.,%4         ;SHIFT R4,R4!1 BY 16.
013146  013767  177776  001574          MOV     @#PS,PSW        ;SAVE PS
013154  122767  000000  001566          CMPB    #0,PSW          ;IS THE PS 0?
013162  001401                          BEQ     .+4
013164  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
013166  022704  052525                  CMP     #52525,%4       ;IS THE RESULT 52525?
013172  001401                          BEQ     .+4
013174  000000                          HLT                     ;R4 IS NOT EQUAL TO 52525
013176  022705  000000                  CMP     #0,%4!1         ;IS THE RESULT 0?
013202  001401                          BEQ     .+4
013204  000000                          HLT                     ;R4!1 IS NOT EQUAL TO 0


                                ;*****************************************************************
                                ;TEST 160     -1 0 SHIFTED BY 16. = 0 0  PS = 7
                                ;*****************************************************************

013206  010701                          SCOPE
013210  012704  177777                  MOV     #-1,%4          ;LOAD R4 WITH -1
013214  012705  000000                  MOV     #0,%4!1         ;LOAD R4!1 WITH 0
013220  000241                          CLC
013222  073427  000020                  ASHC    #16.,%4         ;SHIFT R4,R4!1 BY 16.
013226  013767  177776  001514          MOV     @#PS,PSW        ;SAVE PS
013234  122767  000007  001506          CMPB    #7,PSW          ;IS THE PS 7?
013242  001401                          BEQ     .+4
013244  000000                          HLT                     ;THE PS IS NOT EQUAL TO 7
013246  022704  000000                  CMP     #0,%4           ;IS THE RESULT 0?
013252  001401                          BEQ     .+4
013254  000000                          HLT                     ;R4 IS NOT EQUAL TO 0
013256  022705  000000                  CMP     #0,%4!1         ;IS THE RESULT 0?
013262  001401                          BEQ     .+4
013264  000000                          HLT                     ;R4!1 IS NOT EQUAL TO 0
```

```
                                ;*****************************************************************
                                ;TEST 161     1 SHIFTED BY 8, = 400  PS = 0
                                ;*****************************************************************

013266  010701                          SCOPE
013270  012705  000000                  MOV     #DUMMY,%5       ;LOAD R5 WITH DUMMY
013274  012705  000001                  MOV     #1,%5!1         ;LOAD R5!1 WITH 1
013300  000241                          CLC
013302  073527  000010                  ASHC    #8.,%5          ;SHIFT R5,R5!1 BY 8.
013306  013767  177776  001434          MOV     @#PS,PSW        ;SAVE PS
013314  122767  000000  001426          CMPB    #0,PSW          ;IS THE PS 0?
013322  001401                          BEQ     .+4
013324  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
013326  022705  000400                  CMP     #400,%5         ;IS THE RESULT 400?
013332  001401                          BEQ     .+4
013334  000000                          HLT                     ;R5 IS NOT EQUAL TO 400

                                ;*****************************************************************
                                ;TEST 162     -1 SHIFTED BY 15. = 100000  PS = 11
                                ;*****************************************************************

013336  010701                          SCOPE
013340  012705  000000                  MOV     #DUMMY,%5       ;LOAD R5 WITH DUMMY
013344  012705  177777                  MOV     #-1,%5!1        ;LOAD R5!1 WITH -1
013350  000241                          CLC
013352  073527  000017                  ASHC    #15.,%5         ;SHIFT R5,R5!1 BY 15.
013356  013767  177776  001364          MOV     @#PS,PSW        ;SAVE PS
013364  122767  000011  001356          CMPB    #11,PSW         ;IS THE PS 11?
013372  001401                          BEQ     .+4
013374  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
013376  022705  100000                  CMP     #100000,%5      ;IS THE RESULT 100000?
013402  001401                          BEQ     .+4
013404  000000                          HLT                     ;R5 IS NOT EQUAL TO 100000
```

```
                                        ;*****************************************************************
                                        ;TEST 163     52525 SHIFTED BY 0 = 52525  PS = 0
                                        ;*****************************************************************

013406  010701                          SCOPE
013410  012705  000000                  MOV     #DUMMY,%5       ;LOAD R5 WITH DUMMY
013414  012705  052525                  MOV     #52525,%5!1     ;LOAD R5!1 WITH 52525
013420  000241                          CLC
013422  073527  000000                  ASHC    #0,%5           ;SHIFT R5,R5!1 BY 0
013426  013767  177776  001314          MOV     @#PS,PSW        ;SAVE PS
013434  122767  000000  001306          CMPB    #0,PSW          ;IS THE PS 0?
013442  001401                          BEQ     .+4
013444  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
013446  022705  052525                  CMP     #52525,%5       ;IS THE RESULT 52525?
013452  001401                          BEQ     .+4
013454  000000                          HLT                     ;R5 IS NOT EQUAL TO 52525

                                        ;*****************************************************************
                                        ;TEST 164     20010 SHIFTED BY -13. = 101  PS = 0
                                        ;*****************************************************************

013456  010701                          SCOPE
013460  012705  000000                  MOV     #DUMMY,%5       ;LOAD R5 WITH DUMMY
013464  012705  020010                  MOV     #20010,%5!1     ;LOAD R5!1 WITH 20010
013470  000241                          CLC
013472  073527  177763                  ASHC    #-13.,%5        ;SHIFT R5,R5!1 BY -13.
013476  013767  177776  001244          MOV     @#PS,PSW        ;SAVE PS
013504  122767  000000  001236          CMPB    #0,PSW          ;IS THE PS 0?
013512  001401                          BEQ     .+4
013514  000000                          HLT                     ;THE PS IS NOT EQUAL TO 0
013516  022705  000101                  CMP     #101,%5         ;IS THE RESULT 101?
013522  001401                          BEQ     .+4
013524  000000                          HLT                     ;R5 IS NOT EQUAL TO 101
```

```
                                ;*****************************************************************
                                ;TEST 165     -1 SHIFTED BY 16, = 0  PS = 11
                                ;*****************************************************************

013526  010701                          SCOPE
013530  012705  000000                  MOV     #DUMMY,%5       ;LOAD R5 WITH DUMMY
013534  012705  177777                  MOV     #-1,%5:1        ;LOAD R5:1 WITH -1
013540  000241                          CLC
013542  073527  000020                  ASHC    #16.,%5         ;SHIFT R5,R5:1 BY 16.
013546  013767  177776  001174          MOV     @#PS,PSW        ;SAVE PS
013554  122767  000011  001166          CMPB    #11,PSW         ;IS THE PS 11?
013562  001401                          BEQ     .+4
013564  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
013566  022705  000000                  CMP     #0,%5           ;IS THE RESULT 0?
013572  001401                          BEQ     .+4
013574  000000                          HLT                     ;R5 IS NOT EQUAL TO 0

                                ;*****************************************************************
                                ;TEST 166     1 SHIFTED BY -1 = 100000  PS = 1
                                ;*****************************************************************

013576  010701                          SCOPE
013600  012705  000000                  MOV     #DUMMY,%5       ;LOAD R5 WITH DUMMY
013604  012705  000001                  MOV     #1,%5:1         ;LOAD R5:1 WITH 1
013610  000241                          CLC
013612  073527  177777                  ASHC    #-1,%5          ;SHIFT R5,R5:1 BY -1
013616  013767  177776  001124          MOV     @#PS,PSW        ;SAVE PS
013624  122767  000001  001116          CMPB    #1,PSW          ;IS THE PS 1?
013632  001401                          BEQ     .+4
013634  000000                          HLT                     ;THE PS IS NOT EQUAL TO 1
013636  022705  100000                  CMP     #100000,%5      ;IS THE RESULT 100000?
013642  001401                          BEQ     .+4
013644  000000                          HLT                     ;R5 IS NOT EQUAL TO 100000
```

```
                                ;*****************************************************************
                                ;TEST 167     125252 SHIFTED BY -16. = 125252  PS = 11
                                ;*****************************************************************

013646  010701                          SCOPE
013650  012705  000000                  MOV     #DUMMY,%5       ;LOAD R5 WITH DUMMY
013654  012705  125252                  MOV     #125252,%5!1    ;LOAD R5!1 WITH 125252
013660  000241                          CLC
013662  073527  177760                  ASHC    #-16.,%5        ;SHIFT R5,R5!1 BY -16.
013666  013767  177776  001054          MOV     @#PS,PSW        ;SAVE PS
013674  122767  000011  001046          CMPB    #11,PSW         ;IS THE PS 11?
013702  001401                          BEQ     .+4
013704  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
013706  022705  125252                  CMP     #125252,%5      ;IS THE RESULT 125252?
013712  001401                          BEQ     .+4
013714  000000                          HLT                     ;R5 IS NOT EQUAL TO 125252


013716  012702  177771                  MOV     #-7,%2
013722  012703  014754                  MOV     #S1,%3
013726  012704  014756                  MOV     #S2,%4

                                ;*****************************************************************
                                ;TEST 170     125252 125252 SHIFTED BY S1 = 177525 52525  PS = 10
                                ;*****************************************************************

013732  010701                          SCOPE
013734  012700  125252                  MOV     #125252,%0      ;LOAD R0 WITH 125252
013740  012701  125252                  MOV     #125252,%0!1    ;LOAD R0!1 WITH 125252
013744  000241                          CLC
013746  073067  001022                  ASHC    S1,%0           ;SHIFT R0,R0!1 BY S1
013752  013767  177776  000770          MOV     @#PS,PSW        ;SAVE PS
013760  122767  000010  000762          CMPB    #10,PSW         ;IS THE PS 10?
013766  001401                          BEQ     .+4
013770  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
013772  022700  177525                  CMP     #177525,%0      ;IS THE RESULT 177525?
013776  001401                          BEQ     .+4
014000  000000                          HLT                     ;R0 IS NOT EQUAL TO 177525
014002  022701  052525                  CMP     #52525,%0!1     ;IS THE RESULT 52525?
014006  001401                          BEQ     .+4
014010  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 52525
```

```
                                ;*****************************************************************
                                ;TEST 171     125252 125252 SHIFTED BY @S2 = 177525 52525  PS = 10
                                ;*****************************************************************

014012  010701                          SCOPE
014014  012700  125252                  MOV     #125252,%0      ;LOAD R0 WITH 125252
014020  012701  125252                  MOV     #125252,%0!1    ;LOAD R0!1 WITH 125252
014024  000241                          CLC
014026  073077  000724                  ASHC    @S2,%0          ;SHIFT R0,R0!1 BY @S2
014032  013767  177776  000710          MOV     @#PS,PSW        ;SAVE PS
014040  122767  000010  000702          CMPB    #10,PSW         ;IS THE PS 10?
014046  001401                          BEQ     .+4
014050  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
014052  022700  177525                  CMP     #177525,%0      ;IS THE RESULT 177525?
014056  001401                          BEQ     .+4
014060  000000                          HLT                     ;R0 IS NOT EQUAL TO 177525
014062  022701  052525                  CMP     #52525,%0!1     ;IS THE RESULT 52525?
014066  001401                          BEQ     .+4
014070  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 52525

                                ;*****************************************************************
                                ;TEST 172     125252 125252 SHIFTED BY @#S1 = 177525 52525  PS = 10
                                ;*****************************************************************

014072  010701                          SCOPE
014074  012700  125252                  MOV     #125252,%0      ;LOAD R0 WITH 125252
014100  012701  125252                  MOV     #125252,%0!1    ;LOAD R0!1 WITH 125252
014104  000241                          CLC
014106  073037  014754                  ASHC    @#S1,%0         ;SHIFT R0,R0!1 BY @#S1
014112  013767  177776  000630          MOV     @#PS,PSW        ;SAVE PS
014120  122767  000010  000622          CMPB    #10,PSW         ;IS THE PS 10?
014126  001401                          BEQ     .+4
014130  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
014132  022700  177525                  CMP     #177525,%0      ;IS THE RESULT 177525?
014136  001401                          BEQ     .+4
014140  000000                          HLT                     ;R0 IS NOT EQUAL TO 177525
014142  022701  052525                  CMP     #52525,%0!1     ;IS THE RESULT 52525?
014146  001401                          BEQ     .+4
014150  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 52525
```

```
                                ;*****************************************************************
                                ;TEST 173     125252 125252 SHIFTED BY %2 = 177525 52525  PS = 10
                                ;*****************************************************************

014152  010701                          SCOPE
014154  012700  125252                  MOV     #125252,%0      ;LOAD R0 WITH 125252
014160  012701  125252                  MOV     #125252,%0!1    ;LOAD R0!1 WITH 125252
014164  000241                          CLC
014166  073002                          ASHC    %2,%0           ;SHIFT R0,R0!1 BY %2
014170  013767  177776  000552          MOV     @#PS,PSW        ;SAVE PS
014176  122767  000010  000544          CMPB    #10,PSW         ;IS THE PS 10?
014204  001401                          BEQ     .+4
014206  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
014210  022700  177525                  CMP     #177525,%0      ;IS THE RESULT 177525?
014214  001401                          BEQ     .+4
014216  000000                          HLT                     ;R0 IS NOT EQUAL TO 177525
014220  022701  052525                  CMP     #52525,%0!1     ;IS THE RESULT 52525?
014224  001401                          BEQ     .+4
014226  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 52525

                                ;*****************************************************************
                                ;TEST 174     125252 125252 SHIFTED BY (3)+ = 177525 52525  PS = 10
                                ;*****************************************************************

014230  010701                          SCOPE
014232  012700  125252                  MOV     #125252,%0      ;LOAD R0 WITH 125252
014236  012701  125252                  MOV     #125252,%0!1    ;LOAD R0!1 WITH 125252
014242  000241                          CLC
014244  073023                          ASHC    (3)+,%0         ;SHIFT R0,R0!1 BY (3)+
014246  013767  177776  000474          MOV     @#PS,PSW        ;SAVE PS
014254  122767  000010  000466          CMPB    #10,PSW         ;IS THE PS 10?
014262  001401                          BEQ     .+4
014264  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
014266  022700  177525                  CMP     #177525,%0      ;IS THE RESULT 177525?
014272  001401                          BEQ     .+4
014274  000000                          HLT                     ;R0 IS NOT EQUAL TO 177525
014276  022701  052525                  CMP     #52525,%0!1     ;IS THE RESULT 52525?
014302  001401                          BEQ     .+4
014304  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 52525
```

```
                                ;*****************************************************************
                                ;TEST 175     125252 125252 SHIFTED BY -(3) = 177525 52525  PS = 10
                                ;*****************************************************************

014306  010701                          SCOPE
014310  012700  125232                  MOV     #125252,%0      ;LOAD R0 WITH 125252
014314  012701  125252                  MOV     #125252,%0+1    ;LOAD R0+1 WITH 125252
014320  000241                          CLC
014322  073043                          ASHC    -(3),%0         ;SHIFT R0,R0+1 BY -(3)
014324  013767  177776  000416          MOV     @#PS,PSW        ;SAVE PS
014332  122767  000010  000410          CMPB    #10,PSW         ;IS THE PS 10?
014340  001401                          BEQ     .+4
014342  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
014344  022700  177525                  CMP     #177525,%0      ;IS THE RESULT 177525?
014350  001401                          BEQ     .+4
014352  000000                          HLT                     ;R0 IS NOT EQUAL TO 177525
014354  022701  052525                  CMP     #52525,%0+1     ;IS THE RESULT 52525?
014360  001401                          BEQ     .+4
014362  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 52525

                                ;*****************************************************************
                                ;TEST 176     125252 125252 SHIFTED BY 2(4) = 177252 125252  PS = 11
                                ;*****************************************************************

014364  010701                          SCOPE
014366  012700  125252                  MOV     #125252,%0      ;LOAD R0 WITH 125252
014372  012701  125252                  MOV     #125252,%0+1    ;LOAD R0+1 WITH 125252
014376  000241                          CLC
014400  073064  000002                  ASHC    2(4),%0         ;SHIFT R0,R0+1 BY 2(4)
014404  013767  177776  000336          MOV     @#PS,PSW        ;SAVE PS
014412  122767  000011  000330          CMPB    #11,PSW         ;IS THE PS 11?
014420  001401                          BEQ     .+4
014422  000000                          HLT                     ;THE PS IS NOT EQUAL TO 11
014424  022700  177252                  CMP     #177252,%0      ;IS THE RESULT 177252?
014430  001401                          BEQ     .+4
014432  000000                          HLT                     ;R0 IS NOT EQUAL TO 177252
014434  022701  125252                  CMP     #125252,%0+1    ;IS THE RESULT 125252?
014440  001401                          BEQ     .+4
014442  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 125252
```

```
                                        ;*****************************************************************
                                        ;TEST 177     125252 125252 SHIFTED BY @(4) = 177525 52525  PS = 10
                                        ;*****************************************************************

014444  010701                          SCOPE
014446  012700  125252                  MOV     #125252,%0      ;LOAD R0 WITH 125252
014452  012701  125232                  MOV     #125252,%0!1    ;LOAD R0!1 WITH 125252
014456  000241                          CLC
014460  073074  000000                  ASHC    @(4),%0         ;SHIFT R0,R0!1 BY @(4)
014464  013767  177776  000256          MOV     @#PS,PSW        ;SAVE PS
014472  122767  000010  000250          CMPB    #10,PSW         ;IS THE PS 10?
014500  001401                          BEQ     .+4
014502  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
014504  022700  177525                  CMP     #177525,%0      ;IS THE RESULT 177525?
014510  001401                          BEQ     .+4
014512  000000                          HLT                     ;R0 IS NOT EQUAL TO 177525
014514  022701  052525                  CMP     #52525,%0!1     ;IS THE RESULT 52525?
014520  001401                          BEQ     .+4
014522  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 52525

                                        ;*****************************************************************
                                        ;TEST 200     125252 125252 SHIFTED BY @(4)+ = 177525 52525  PS = 10
                                        ;*****************************************************************

014524  010701                          SCOPE
014526  012700  125252                  MOV     #125252,%0      ;LOAD R0 WITH 125252
014532  012701  125232                  MOV     #125252,%0!1    ;LOAD R0!1 WITH 125252
014536  000241                          CLC
014540  073034                          ASHC    @(4)+,%0        ;SHIFT R0,R0!1 BY @(4)+
014542  013767  177776  000200          MOV     @#PS,PSW        ;SAVE PS
014550  122767  000010  000172          CMPB    #10,PSW         ;IS THE PS 10?
014556  001401                          BEQ     .+4
014560  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
014562  022700  177525                  CMP     #177525,%0      ;IS THE RESULT 177525?
014566  001401                          BEQ     .+4
014570  000000                          HLT                     ;R0 IS NOT EQUAL TO 177525
014572  022701  052525                  CMP     #52525,%0!1     ;IS THE RESULT 52525?
014576  001401                          BEQ     .+4
014600  000000                          HLT                     ;R0!1 IS NOT EQUAL TO 52525
```

```
                                ;*****************************************************************
                                ;TEST 201     125252 125252 SHIFTED BY @-(4) = 177525 52525  PS = 10
                                ;*****************************************************************

014602  010701                          SCOPE
014604  012700  125252                  MOV     #125252,%0      ;LOAD R0 WITH 125252
014610  012701  125252                  MOV     #125252,%0+1    ;LOAD R0+1 WITH 125252
014614  000241                          CLC
014616  073054                          ASHC    @-(4),%0        ;SHIFT R0,R0+1 BY @-(4)
014620  013767  177776  000122          MOV     @#PS,PSW        ;SAVE PS
014626  122767  000010  000114          CMPB    #10,PSW         ;IS THE PS 10?
014634  001401                          BEQ     .+4
014636  000000                          HLT                     ;THE PS IS NOT EQUAL TO 10
014640  022700  177525                  CMP     #177525,%0      ;IS THE RESULT 177525?
014644  001401                          BEQ     .+4
014646  000000                          HLT                     ;R0 IS NOT EQUAL TO 177525
014650  022701  052525                  CMP     #52525,%0+1     ;IS THE RESULT 52525?
014654  001401                          BEQ     .+4
014656  000000                          HLT                     ;R0+1 IS NOT EQUAL TO 52525


014660  005267  164114                  INC     ICNT
014664  016737  164110  177570          MOV     ICNT,@#DISPLAY
014672  022767  020000  164100          CMP     #20000,ICNT
014700  001402                          BEQ     .+6
014702  000167  164074                  JMP     BEG
014706  005067  164066                  CLR     ICNT
014712  105737  177564                  TSTB    @#177564
014716  100375                          BPL     .-4
014720  112737  000007  177566          MOVB    #7,@#177566
014726  013700  000042                  MOV     @#42,%0         ;GET MONITOR RETURN ADDRESS
014732  001404                          BEQ     1$              ;SKIP IF NONE
014734  004710                          JSR     7,(0)           ;GO BACK TO THE MONITOR
014736  000240                          NOP
014740  000240                          NOP
014742  000240                          NOP
014744  000137  000200          1$:     JMP     @#200           ;RESTART THE PROGRAM

014750  000000                  PSW:    0
014752  000007                  S0:     7
014754  177771                  S1:     -7
014756  014754                  S2:     S1
014760  177772                  S3:     -6

        000001                  .END
```

DCKBJA.P11 SYMBOL TABLE

BEG	001002	DISPLA	= 177570	DUMMY	= 000000	HLT	= 000000
ICNT	001000	M	= 000006	N	= 000202	PS	= 177776
PSW	014750	R	= 000000	SCOPE	= 010701	SWR	= 177570
S0	014752	S1	014754	S2	014756	S3	014760
T	= 177762	.	= 014762				

ERRORS DETECTED: 0

IDENTIFICATION

PRODUCT CODE:	MAINDEC-11-DCKBK-A1-D
PRODUCT NAME:	MUL INSTRUCTION TEST
DATE CREATED:	MARCH 15, 1972
MAINTAINER:	DIAGNOSTIC GROUP
AUTHOR:	B. BRAIN

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1,0 ABSTRACT

THIS PROGRAM WILL INCREMENTLY TEST AND ISOLATE SIMPLE MALFUNCTIONS
RELATED TO THE MUL INSTRUCTION

2,0 REQUIREMENTS

2,1 EQUIPMENT
BASIC 11/45 SYSTEM OR
11/40 WITH KE11-E OPTION

2,2 STORAGE
THIS PROGRAM USES 0 THRU 17500

2,3 PRELIMINARY PROGRAMS
D0AA THRU D0MA

3,0 LOADING PROCEDURE
LOAD PROGRAM USING ABS LOADER

4,0 STARTING PROCEDURE
LOAD ADDRESS 200, PRESS START, THE PROGRAM WILL LOOP
AND RING BELL ON PASS COMPLETION,

5,0 OPERATING PROCEDURE

5,1 SWITCH SETTINGS
NONE

5,2 SUBROUTINE ABSTRACTS

5,2,1 SCOPE
SCOPE IS A MOVE PC,R1 AND STORES THE PC+2 IN R1,

5,2,2 HLT
HLT IS A HALT INSTRUCTION,

6,0 ERRORS
ALL ERRORS WILL CAUSE A HALT
TRAP AND INTERRUPT ERRORS WILL CAUSE A HALT AT VECTOR+2,

6,1 ERROR RECOVERY
PRESS CONTINUE TO PROCEDE TO NEXT TEST

6,2 ERROR LOOPING
TO LOOP ON AN ERROR, PLACE A BRANCH TO THE PREVIOUS SCOPE
INSTRUCTION IN PLACE OF THE HALT INSTRUCTION,
NOTE THAT IF THE ERROR IS INTERMITTANT THAT THE TEST WILL
DROP THRU THE HALT AND PROCEED TO THE NEXT TEST,
THEREFORE, TO LOOP THE TEST CONTINUOSLY REPLACE THE BEQ ,+4
INSTRUCTION IMMEDIATLY PRECEEDING THE HALT WITH A BRANCH
BACK TO THE PREVIOUS SCOPE,

TO LOOP ON TRAP FAILURES, PATCH IN THE FOLLOWING ROUTINE
AT THE ADDRESS OF THE TRAP VECTOR,

```
TRAPVEC:        TRAPVEC+4
TRAPVEC+2:      0
TRAPVEC+4:      012716  ;MOVE SCOPE ADDRESS TO STACK
TRAPVEC+6:      ADDRESS ;ADDRESS OF PREVIOUS SCOPE
TRAPVEC+10:     000006  ;RETURN TO TEST AT SCOPE
```

RESTORE ALL LOCATIONS BEFORE PROCEEDING TO NEXT TEST.

7.0 RESTRICTIONS
NONE

8.0 MISCELLANEOUS
ON TRAP ERRORS THE STACK POINTER(R6) WILL CONTAIN THE ADDRESS WHERE THE TRAP OCCURED.

8.1 EXECUTION TIME
THE PROGRAM TAKES ABOUT 1 MINUTE.

8.2 STACK POINTER
THE PROGRAM INITIALLY SETS THE STACK POINTER AT 500.

9.0 PROGRAM DESCRIPTIONS

THIS IS A TEST OF THE MUL INSTRUCTION. IT TESTS MUL ON DIFERENT NUMBER PATTERNS IN ALL REGISTERS

```
                                        .TITLE  MAINDEC-11-DCKBK-A  MUL TEST
                                        ;COPYRIGHT 1972, DIGITAL EQUIPMENT CORP., MAYNARD, MASS.  01754
                                        ;PROGRAM BY BOB BRAIN

                                        .ABS


                    000000              .=0                             ;TRAP CATCHER 0 - 776

                    000000              HLT=HALT
                    010701              SCOPE=  10701
                    000001              N=1
                    000006              SP=%6
                    000007              PC=%7
                    177570              SWR=177570
                    177570              DISPLAY=SWR
                    177776              PS=177776
                    000000              M=0

                    000200              .=200
000200  000167  000576                          JMP     BEG
                    001000              .=1000
001000  000000                          !CNT!   0                       ;PASS COUNT

001002  012706  000500          BEG:    MOV     #500,%6                 ;** STACK AT 500 **
001006  005037  177776                  CLR     @#PS
001012  032737  001000  177570          BIT     #1000,@#SWR             ;WHICH REGISTER SET?
001020  001403                          BEQ     .+10
001022  012737  004000  177776          MOV     #4000,@#PS              ;ALTERNATE!
001030  032767  000400  176532          BIT     #400,SWR
001036  001403                          BEQ     .+10
001040  116767  176524  176722          MOVB    SWR,177770
```

```
                                ;*****************************************************************
                                ;TEST 1   MUL   0 * #0 = 0 0   PS = 4
                                ;*****************************************************************

001046  010701                          SCOPE                   ;TEST OF MULTIPLY
001050  012700  000000                  MOV     #0,%0           ;LOAD MULTIPLICAN WITH 0
001054  070027  000000                  MUL     #0,%0           ;MULTIPLY 0 * #0
001060  013767  177776  013370          MOV     @#PS,PSW        ;SAVE PS
001066  122767  000004  013362          CMPB    #4,PSW          ;IS PS = 4
001074  001401                          BEQ     .+4
001076  000000                          HLT                     ;PS IS WRONG
001100  022700  000000                  CMP     #0,%0           ;IS HIGH ORDER = 0
001104  001401                          BEQ     .+4
001106  000000                          HLT                     ;HIGH ORDER IS WRONG
001110  022701  000000                  CMP     #0,%011         ;IS LOW ORDER = 0
001114  001401                          BEQ     .+4
001116  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 2   MUL   0 * #1 = 0 0   PS = 4
                                ;*****************************************************************

001120  010701                          SCOPE                   ;TEST OF MULTIPLY
001122  012700  000000                  MOV     #0,%0           ;LOAD MULTIPLICAN WITH 0
001126  070027  000001                  MUL     #1,%0           ;MULTIPLY 0 * #1
001132  013767  177776  013316          MOV     @#PS,PSW        ;SAVE PS
001140  122767  000004  013310          CMPB    #4,PSW          ;IS PS = 4
001146  001401                          BEQ     .+4
001150  000000                          HLT                     ;PS IS WRONG
001152  022700  000000                  CMP     #0,%0           ;IS HIGH ORDER = 0
001156  001401                          BEQ     .+4
001160  000000                          HLT                     ;HIGH ORDER IS WRONG
001162  022701  000000                  CMP     #0,%011         ;IS LOW ORDER = 0
001166  001401                          BEQ     .+4
001170  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 3   MUL   1 * #0 = 0 0   PS = 4
                                ;*****************************************************************

001172  010701                          SCOPE                   ;TEST OF MULTIPLY
001174  012700  000001                  MOV     #1,%0           ;LOAD MULTIPLICAN WITH 1
001200  070027  000000                  MUL     #0,%0           ;MULTIPLY 1 * #0
001204  013767  177776  013244          MOV     @#PS,PSW        ;SAVE PS
001212  122767  000004  013236          CMPB    #4,PSW          ;IS PS = 4
001220  001401                          BEQ     .+4
001222  000000                          HLT                     ;PS IS WRONG
001224  022700  000000                  CMP     #0,%0           ;IS HIGH ORDER = 0
001230  001401                          BEQ     .+4
001232  000000                          HLT                     ;HIGH ORDER IS WRONG
001234  022701  000000                  CMP     #0,%011         ;IS LOW ORDER = 0
001240  001401                          BEQ     .+4
001242  000000                          HLT                     ;LOW ORDER IS WRONG


                                ;*****************************************************************
                                ;TEST 4   MUL   -1 * #1 = -1 -1   PS = 10
                                ;*****************************************************************

001244  010701                          SCOPE                   ;TEST OF MULTIPLY
001246  012700  177777                  MOV     #-1,%0          ;LOAD MULTIPLICAN WITH -1
001252  070027  000001                  MUL     #1,%0           ;MULTIPLY -1 * #1
001256  013767  177776  013172          MOV     @#PS,PSW        ;SAVE PS
001264  122767  000010  013164          CMPB    #10,PSW         ;IS PS = 10
001272  001401                          BEQ     .+4
001274  000000                          HLT                     ;PS IS WRONG
001276  022700  177777                  CMP     #-1,%0          ;IS HIGH ORDER = -1
001302  001401                          BEQ     .+4
001304  000000                          HLT                     ;HIGH ORDER IS WRONG
001306  022701  177777                  CMP     #-1,%011        ;IS LOW ORDER = -1
001312  001401                          BEQ     .+4
001314  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 5   MUL   1 * #-1 = -1 -1   PS = 10
                                ;*****************************************************************

001316  010701                          SCOPE                   ;TEST OF MULTIPLY
001320  012700  000001                  MOV     #1,%0           ;LOAD MULTIPLICAN WITH 1
001324  070027  177777                  MUL     #-1,%0          ;MULTIPLY 1 * #-1
001330  013767  177776  013120          MOV     @#PS,PSW        ;SAVE PS
001336  122767  000010  013112          CMPB    #10,PSW         ;IS PS = 10
001344  001401                          BEQ     .+4
001346  000000                          HLT                     ;PS IS WRONG
001350  022700  177777                  CMP     #-1,%0          ;IS HIGH ORDER = -1
001354  001401                          BEQ     .+4
001356  000000                          HLT                     ;HIGH ORDER IS WRONG
001360  022701  177777                  CMP     #-1,%011        ;IS LOW ORDER = -1
001364  001401                          BEQ     .+4
001366  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 6   MUL   1 * #2 = 0 2   PS = 0
                                ;*****************************************************************

001370  010701                          SCOPE                   ;TEST OF MULTIPLY
001372  012700  000001                  MOV     #1,%0           ;LOAD MULTIPLICAN WITH 1
001376  070027  000002                  MUL     #2,%0           ;MULTIPLY 1 * #2
001402  013767  177776  013046          MOV     @#PS,PSW        ;SAVE PS
001410  122767  000000  013040          CMPB    #0,PSW          ;IS PS = 0
001416  001401                          BEQ     .+4
001420  000000                          HLT                     ;PS IS WRONG
001422  022700  000000                  CMP     #0,%0           ;IS HIGH ORDER = 0
001426  001401                          BEQ     .+4
001430  000000                          HLT                     ;HIGH ORDER IS WRONG
001432  022701  000002                  CMP     #2,%011         ;IS LOW ORDER = 2
001436  001401                          BEQ     .+4
001440  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 7   MUL   2 * #2 = 0 4   PS = 0
                                        ;*****************************************************************

001442  010701                          SCOPE                   ;TEST OF MULTIPLY
001444  012700  000002                  MOV     #2,%0           ;LOAD MULTIPLICAN WITH 2
001450  070027  000002                  MUL     #2,%0           ;MULTIPLY 2 * #2
001454  013767  177776  012774          MOV     @#PS,PSW        ;SAVE PS
001462  122767  000000  012766          CMPB    #0,PSW          ;IS PS = 0
001470  001401                          BEQ     .+4
001472  000000                          HLT                     ;PS IS WRONG
001474  022700  000000                  CMP     #0,%0           ;IS HIGH ORDER = 0
001500  001401                          BEQ     .+4
001502  000000                          HLT                     ;HIGH ORDER IS WRONG
001504  022701  000004                  CMP     #4,%011         ;IS LOW ORDER = 4
001510  001401                          BEQ     .+4
001512  000000                          HLT                     ;LOW ORDER IS WRONG

                                        ;*****************************************************************
                                        ;TEST 10   MUL   1000 * #200 = 1 0   PS = 1
                                        ;*****************************************************************

001514  010701                          SCOPE                   ;TEST OF MULTIPLY
001516  012700  001000                  MOV     #1000,%0        ;LOAD MULTIPLICAN WITH 1000
001522  070027  000200                  MUL     #200,%0         ;MULTIPLY 1000 * #200
001526  013767  177776  012722          MOV     @#PS,PSW        ;SAVE PS
001534  122767  000001  012714          CMPB    #1,PSW          ;IS PS = 1
001542  001401                          BEQ     .+4
001544  000000                          HLT                     ;PS IS WRONG
001546  022700  000001                  CMP     #1,%0           ;IS HIGH ORDER = 1
001552  001401                          BEQ     .+4
001554  000000                          HLT                     ;HIGH ORDER IS WRONG
001556  022701  000000                  CMP     #0,%011         ;IS LOW ORDER = 0
001562  001401                          BEQ     .+4
001564  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 11   MUL   200 * #1000 = 1 0   PS = 1
                                        ;*****************************************************************

001566  010701                          SCOPE                   ;TEST OF MULTIPLY
001570  012700  000200                  MOV     #200,%0         ;LOAD MULTIPLICAN WITH 200
001574  070027  001000                  MUL     #1000,%0        ;MULTIPLY 200 * #1000
001600  013767  177776  012650          MOV     @#PS,PSW        ;SAVE PS
001606  122767  000001  012642          CMPB    #1,PSW          ;IS PS = 1
001614  001401                          BEQ     .+4
001616  000000                          HLT                     ;PS IS WRONG
001620  022700  000001                  CMP     #1,%0           ;IS HIGH ORDER = 1
001624  001401                          BEQ     .+4
001626  000000                          HLT                     ;HIGH ORDER IS WRONG
001630  022701  000000                  CMP     #0,%01          ;IS LOW ORDER = 0
001634  001401                          BEQ     .+4
001636  000000                          HLT                     ;LOW ORDER IS WRONG

                                        ;*****************************************************************
                                        ;TEST 12   MUL   77777 * #2 = 0 177776   PS = 1
                                        ;*****************************************************************

001640  010701                          SCOPE                   ;TEST OF MULTIPLY
001642  012700  077777                  MOV     #77777,%0       ;LOAD MULTIPLICAN WITH 77777
001646  070027  000002                  MUL     #2,%0           ;MULTIPLY 77777 * #2
001652  013767  177776  012576          MOV     @#PS,PSW        ;SAVE PS
001660  122767  000001  012570          CMPB    #1,PSW          ;IS PS = 1
001666  001401                          BEQ     .+4
001670  000000                          HLT                     ;PS IS WRONG
001672  022700  000000                  CMP     #0,%0           ;IS HIGH ORDER = 0
001676  001401                          BEQ     .+4
001700  000000                          HLT                     ;HIGH ORDER IS WRONG
001702  022701  177776                  CMP     #177776,%01     ;IS LOW ORDER = 177776
001706  001401                          BEQ     .+4
001710  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 13   MUL   2 * #77777 = 0 177776   PS = 1
                                ;*****************************************************************

001712  010701                          SCOPE                   ;TEST OF MULTIPLY
001714  012700  000002                  MOV     #2,%0           ;LOAD MULTIPLICAN WITH 2
001720  070027  077777                  MUL     #77777,%0       ;MULTIPLY 2 * #77777
001724  013767  177776  012524          MOV     @#PS,PSW        ;SAVE PS
001732  122767  000001  012516          CMPB    #1,PSW          ;IS PS = 1
001740  001401                          BEQ     .+4
001742  000000                          HLT                     ;PS IS WRONG
001744  022700  000000                  CMP     #0,%0           ;IS HIGH ORDER = 0
001750  001401                          BEQ     .+4
001752  000000                          HLT                     ;HIGH ORDER IS WRONG
001754  022701  177776                  CMP     #177776,%011    ;IS LOW ORDER = 177776
001760  001401                          BEQ     .+4
001762  000000                          HLT                     ;LOW ORDER IS WRONG


                                ;*****************************************************************
                                ;TEST 14   MUL   7777 * #10 = 0 77770   PS = 0
                                ;*****************************************************************

001764  010701                          SCOPE                   ;TEST OF MULTIPLY
001766  012700  007777                  MOV     #7777,%0        ;LOAD MULTIPLICAN WITH 7777
001772  070027  000010                  MUL     #10,%0          ;MULTIPLY 7777 * #10
001776  013767  177776  012452          MOV     @#PS,PSW        ;SAVE PS
002004  122767  000000  012444          CMPB    #0,PSW          ;IS PS = 0
002012  001401                          BEQ     .+4
002014  000000                          HLT                     ;PS IS WRONG
002016  022700  000000                  CMP     #0,%0           ;IS HIGH ORDER = 0
002022  001401                          BEQ     .+4
002024  000000                          HLT                     ;HIGH ORDER IS WRONG
002026  022701  077770                  CMP     #77770,%011     ;IS LOW ORDER = 77770
002032  001401                          BEQ     .+4
002034  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 15   MUL   10 * #7777 = 0 77770   PS = 0
                                ;*****************************************************************

002036  010701                          SCOPE                   ;TEST OF MULTIPLY
002040  012700  000010                  MOV     #10,%0          ;LOAD MULTIPLICAN WITH 10
002044  070027  007777                  MUL     #7777,%0        ;MULTIPLY 10 * #7777
002050  013767  177776  012400          MOV     @#PS,PSW        ;SAVE PS
002056  122767  000000  012372          CMPB    #0,PSW          ;IS PS = 0
002064  001401                          BEQ     .+4
002066  000000                          HLT                     ;PS IS WRONG
002070  022700  000000                  CMP     #0,%0           ;IS HIGH ORDER = 0
002074  001401                          BEQ     .+4
002076  000000                          HLT                     ;HIGH ORDER IS WRONG
002100  022701  077770                  CMP     #77770,%01      ;IS LOW ORDER = 77770
002104  001401                          BEQ     .+4
002106  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 16   MUL   77777 * #77777 = 37777 1   PS = 1
                                ;*****************************************************************

002110  010701                          SCOPE                   ;TEST OF MULTIPLY
002112  012700  077777                  MOV     #77777,%0       ;LOAD MULTIPLICAN WITH 77777
002116  070027  077777                  MUL     #77777,%0       ;MULTIPLY 77777 * #77777
002122  013767  177776  012326          MOV     @#PS,PSW        ;SAVE PS
002130  122767  000001  012320          CMPB    #1,PSW          ;IS PS = 1
002136  001401                          BEQ     .+4
002140  000000                          HLT                     ;PS IS WRONG
002142  022700  037777                  CMP     #37777,%0       ;IS HIGH ORDER = 37777
002146  001401                          BEQ     .+4
002150  000000                          HLT                     ;HIGH ORDER IS WRONG
002152  022701  000001                  CMP     #1,%01          ;IS LOW ORDER = 1
002156  001401                          BEQ     .+4
002160  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 17   MUL   77777 * #1 = 0 77777   PS = 0
                                ;*****************************************************************

002162  010701                          SCOPE                   ;TEST OF MULTIPLY
002164  012700  077777                  MOV     #77777,%0       ;LOAD MULTIPLICAN WITH 77777
002170  070027  000001                  MUL     #1,%0           ;MULTIPLY 77777 * #1
002174  013767  177776  012254          MOV     @#PS,PSW        ;SAVE PS
002202  122767  000000  012246          CMPB    #0,PSW          ;IS PS = 0
002210  001401                          BEQ     .+4
002212  000000                          HLT                     ;PS IS WRONG
002214  022700  000000                  CMP     #0,%0           ;IS HIGH ORDER = 0
002220  001401                          BEQ     .+4
002222  000000                          HLT                     ;HIGH ORDER IS WRONG
002224  022701  077777                  CMP     #77777,%01      ;IS LOW ORDER = 77777
002230  001401                          BEQ     .+4
002232  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 20   MUL   1 * #77777 = 0 77777   PS = 0
                                ;*****************************************************************

002234  010701                          SCOPE                   ;TEST OF MULTIPLY
002236  012700  000001                  MOV     #1,%0           ;LOAD MULTIPLICAN WITH 1
002242  070027  077777                  MUL     #77777,%0       ;MULTIPLY 1 * #77777
002246  013767  177776  012202          MOV     @#PS,PSW        ;SAVE PS
002254  122767  000000  012174          CMPB    #0,PSW          ;IS PS = 0
002262  001401                          BEQ     .+4
002264  000000                          HLT                     ;PS IS WRONG
002266  022700  000000                  CMP     #0,%0           ;IS HIGH ORDER = 0
002272  001401                          BEQ     .+4
002274  000000                          HLT                     ;HIGH ORDER IS WRONG
002276  022701  077777                  CMP     #77777,%01      ;IS LOW ORDER = 77777
002302  001401                          BEQ     .+4
002304  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 21   MUL   77777 * #-1 = -1 100001   PS = 10
                                        ;*****************************************************************

002306  010701                                 SCOPE                   ;TEST OF MULTIPLY
002310  012700  077777                        MOV     #77777,%0       ;LOAD MULTIPLICAN WITH 77777
002314  070027  177777                        MUL     #-1,%0          ;MULTIPLY 77777 * #-1
002320  013767  177776  012130                MOV     @#PS,PSW        ;SAVE PS
002326  122767  000010  012122                CMPB    #10,PSW         ;IS PS = 10
002334  001401                                BEQ     .+4
002336  000000                                HLT                     ;PS IS WRONG
002340  022700  177777                        CMP     #-1,%0          ;IS HIGH ORDER = -1
002344  001401                                BEQ     .+4
002346  000000                                HLT                     ;HIGH ORDER IS WRONG
002350  022701  100001                        CMP     #100001,%0!1    ;IS LOW ORDER = 100001
002354  001401                                BEQ     .+4
002356  000000                                HLT                     ;LOW ORDER IS WRONG

                                        ;*****************************************************************
                                        ;TEST 22   MUL   -1 * #77777 = -1 100001   PS = 10
                                        ;*****************************************************************

002360  010701                                 SCOPE                   ;TEST OF MULTIPLY
002362  012700  177777                        MOV     #-1,%0          ;LOAD MULTIPLICAN WITH -1
002366  070027  077777                        MUL     #77777,%0       ;MULTIPLY -1 * #77777
002372  013767  177776  012056                MOV     @#PS,PSW        ;SAVE PS
002400  122767  000010  012050                CMPB    #10,PSW         ;IS PS = 10
002406  001401                                BEQ     .+4
002410  000000                                HLT                     ;PS IS WRONG
002412  022700  177777                        CMP     #-1,%0          ;IS HIGH ORDER = -1
002416  001401                                BEQ     .+4
002420  000000                                HLT                     ;HIGH ORDER IS WRONG
002422  022701  100001                        CMP     #100001,%0!1    ;IS LOW ORDER = 100001
002426  001401                                BEQ     .+4
002430  000000                                HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 23   MUL   -2 * #77777 = -1 2   PS = 11
                                ;*****************************************************************

002432  010701                          SCOPE                   ;TEST OF MULTIPLY
002434  012700  177776                  MOV     #-2,%0          ;LOAD MULTIPLICAN WITH -2
002440  070027  077777                  MUL     #77777,%0       ;MULTIPLY -2 * #77777
002444  013767  177776  012004          MOV     @#PS,PSW        ;SAVE PS
002452  122767  000011  011776          CMPB    #11,PSW         ;IS PS = 11
002460  001401                          BEQ     .+4
002462  000000                          HLT                     ;PS IS WRONG
002464  022700  177777                  CMP     #-1,%0          ;IS HIGH ORDER = -1
002470  001401                          BEQ     .+4
002472  000000                          HLT                     ;HIGH ORDER IS WRONG
002474  022701  000002                  CMP     #2,%011         ;IS LOW ORDER = 2
002500  001401                          BEQ     .+4
002502  000000                          HLT                     ;LOW ORDER IS WRONG


                                ;*****************************************************************
                                ;TEST 24   MUL   77777 * #-2 = -1 2   PS = 11
                                ;*****************************************************************

002504  010701                          SCOPE                   ;TEST OF MULTIPLY
002506  012700  077777                  MOV     #77777,%0       ;LOAD MULTIPLICAN WITH 77777
002512  070027  177776                  MUL     #-2,%0          ;MULTIPLY 77777 * #-2
002516  013767  177776  011732          MOV     @#PS,PSW        ;SAVE PS
002524  122767  000011  011724          CMPB    #11,PSW         ;IS PS = 11
002532  001401                          BEQ     .+4
002534  000000                          HLT                     ;PS IS WRONG
002536  022700  177777                  CMP     #-1,%0          ;IS HIGH ORDER = -1
002542  001401                          BEQ     .+4
002544  000000                          HLT                     ;HIGH ORDER IS WRONG
002546  022701  000002                  CMP     #2,%011         ;IS LOW ORDER = 2
002552  001401                          BEQ     .+4
002554  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 25   MUL   125252 * #2 = -1 52524   PS = 11
                                        ;*****************************************************************

002556  010701                          SCOPE                   ;TEST OF MULTIPLY
002560  012700  125252                  MOV     #125252,%0      ;LOAD MULTIPLICAN WITH 125252
002564  070027  000002                  MUL     #2,%0           ;MULTIPLY 125252 * #2
002570  013767  177776  011660          MOV     @#PS,PSW        ;SAVE PS
002576  122767  000011  011652          CMPB    #11,PSW         ;IS PS = 11
002604  001401                          BEQ     .+4
002606  000000                          HLT                     ;PS IS WRONG
002610  022700  177777                  CMP     #-1,%0          ;IS HIGH ORDER = -1
002614  001401                          BEQ     .+4
002616  000000                          HLT                     ;HIGH ORDER IS WRONG
002620  022701  052524                  CMP     #52524,%0!1     ;IS LOW ORDER = 52524
002624  001401                          BEQ     .+4
002626  000000                          HLT                     ;LOW ORDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 26   MUL   2 * #125252 = -1 52524   PS = 11
                                        ;*****************************************************************

002630  010701                          SCOPE                   ;TEST OF MULTIPLY
002632  012700  000002                  MOV     #2,%0           ;LOAD MULTIPLICAN WITH 2
002636  070027  125252                  MUL     #125252,%0      ;MULTIPLY 2 * #125252
002642  013767  177776  011606          MOV     @#PS,PSW        ;SAVE PS
002650  122767  000011  011600          CMPB    #11,PSW         ;IS PS = 11
002656  001401                          BEQ     .+4
002660  000000                          HLT                     ;PS IS WRONG
002662  022700  177777                  CMP     #-1,%0          ;IS HIGH ORDER = -1
002666  001401                          BEQ     .+4
002670  000000                          HLT                     ;HIGH ORDER IS WRONG
002672  022701  052524                  CMP     #52524,%0!1     ;IS LOW ORDER = 52524
002676  001401                          BEQ     .+4
002700  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 27   MUL   52525 * #2 = 0 125252   PS = 1
                                ;*****************************************************************

002702  010701                          SCOPE                   ;TEST OF MULTIPLY
002704  012700  052525                  MOV     #52525,%0       ;LOAD MULTIPLICAN WITH 52525
002710  070027  000002                  MUL     #2,%0           ;MULTIPLY 52525 * #2
002714  013767  177776  011534          MOV     @#PS,PSW        ;SAVE PS
002722  122767  000001  011526          CMPB    #1,PSW          ;IS PS = 1
002730  001401                          BEQ     .+4
002732  000000                          HLT                     ;PS IS WRONG
002734  022700  000000                  CMP     #0,%0           ;IS HIGH ORDER = 0
002740  001401                          BEQ     .+4
002742  000000                          HLT                     ;HIGH ORDER IS WRONG
002744  022701  125252                  CMP     #125252,%011    ;IS LOW ORDER = 125252
002750  001401                          BEQ     .+4
002752  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 30   MUL   2 * #52525 = 0 125252   PS = 1
                                ;*****************************************************************

002754  010701                          SCOPE                   ;TEST OF MULTIPLY
002756  012700  000002                  MOV     #2,%0           ;LOAD MULTIPLICAN WITH 2
002762  070027  052525                  MUL     #52525,%0       ;MULTIPLY 2 * #52525
002766  013767  177776  011462          MOV     @#PS,PSW        ;SAVE PS
002774  122767  000001  011454          CMPB    #1,PSW          ;IS PS = 1
003002  001401                          BEQ     .+4
003004  000000                          HLT                     ;PS IS WRONG
003006  022700  000000                  CMP     #0,%0           ;IS HIGH ORDER = 0
003012  001401                          BEQ     .+4
003014  000000                          HLT                     ;HIGH ORDER IS WRONG
003016  022701  125252                  CMP     #125252,%011    ;IS LOW ORDER = 125252
003022  001401                          BEQ     .+4
003024  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 31   MUL   125252 * #40000 = 165252 100000   PS = 11
                                ;*****************************************************************

003026  010701                          SCOPE                   ;TEST OF MULTIPLY
003030  012700  125252                  MOV     #125252,%0      ;LOAD MULTIPLICAN WITH 125252
003034  070027  040000                  MUL     #40000,%0       ;MULTIPLY 125252 * #40000
003040  013767  177776  011410          MOV     @#PS,PSW        ;SAVE PS
003046  122767  000011  011402          CMPB    #11,PSW         ;IS PS = 11
003054  001401                          BEQ     .+4
003056  000000                          HLT                     ;PS IS WRONG
003060  022700  165252                  CMP     #165252,%0      ;IS HIGH ORDER = 165252
003064  001401                          BEQ     .+4
003066  000000                          HLT                     ;HIGH ORDER IS WRONG
003070  022701  100000                  CMP     #100000,%011    ;IS LOW ORDER = 100000
003074  001401                          BEQ     .+4
003076  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 32   MUL   40000 * #125252 = 165252 100000   PS = 11
                                ;*****************************************************************

003100  010701                          SCOPE                   ;TEST OF MULTIPLY
003102  012700  040000                  MOV     #40000,%0       ;LOAD MULTIPLICAN WITH 40000
003106  070027  125252                  MUL     #125252,%0      ;MULTIPLY 40000 * #125252
003112  013767  177776  011336          MOV     @#PS,PSW        ;SAVE PS
003120  122767  000011  011330          CMPB    #11,PSW         ;IS PS = 11
003126  001401                          BEQ     .+4
003130  000000                          HLT                     ;PS IS WRONG
003132  022700  165252                  CMP     #165252,%0      ;IS HIGH ORDER = 165252
003136  001401                          BEQ     .+4
003140  000000                          HLT                     ;HIGH ORDER IS WRONG
003142  022701  100000                  CMP     #100000,%011    ;IS LOW ORDER = 100000
003146  001401                          BEQ     .+4
003150  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 33   MUL   100000 * #100000 = 40000 0   PS = 1
                                ;*****************************************************************

003152  010701                          SCOPE                   ;TEST OF MULTIPLY
003154  012700  100000                  MOV     #100000,%0      ;LOAD MULTIPLICAN WITH 100000
003160  070027  100000                  MUL     #100000,%0      ;MULTIPLY 100000 * #100000
003164  013767  177776  011264          MOV     @#PS,PSW        ;SAVE PS
003172  122767  000001  011256          CMPB    #1,PSW          ;IS PS = 1
003200  001401                          BEQ     .+4
003202  000000                          HLT                     ;PS IS WRONG
003204  022700  040000                  CMP     #40000,%0       ;IS HIGH ORDER = 40000
003210  001401                          BEQ     .+4
003212  000000                          HLT                     ;HIGH ORDER IS WRONG
003214  022701  000000                  CMP     #0,%011         ;IS LOW ORDER = 0
003220  001401                          BEQ     .+4
003222  000000                          HLT                     ;LOW ORDER IS WRONG


                                ;*****************************************************************
                                ;TEST 34   MUL   70707 * #70707 = 31221 44261   PS = 1
                                ;*****************************************************************

003224  010701                          SCOPE                   ;TEST OF MULTIPLY
003226  012700  070707                  MOV     #70707,%0       ;LOAD MULTIPLICAN WITH 70707
003232  070027  070707                  MUL     #70707,%0       ;MULTIPLY 70707 * #70707
003236  013767  177776  011212          MOV     @#PS,PSW        ;SAVE PS
003244  122767  000001  011204          CMPB    #1,PSW          ;IS PS = 1
003252  001401                          BEQ     .+4
003254  000000                          HLT                     ;PS IS WRONG
003256  022700  031221                  CMP     #31221,%0       ;IS HIGH ORDER = 31221
003262  001401                          BEQ     .+4
003264  000000                          HLT                     ;HIGH ORDER IS WRONG
003266  022701  044261                  CMP     #44261,%011     ;IS LOW ORDER = 44261
003272  001401                          BEQ     .+4
003274  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 35   MUL   107070 * #107070 = 31222 26100   PS = 1
                                ;*****************************************************************

003276  010701                          SCOPE                   ;TEST OF MULTIPLY
003300  012700  107070                  MOV     #107070,%0      ;LOAD MULTIPLICAN WITH 107070
003304  070027  107070                  MUL     #107070,%0      ;MULTIPLY 107070 * #107070
003310  013767  177776  011140          MOV     @#PS,PSW        ;SAVE PS
003316  122767  000001  011132          CMPB    #1,PSW          ;IS PS = 1
003324  001401                          BEQ     .+4
003326  000000                          HLT                     ;PS IS WRONG
003330  022700  031222                  CMP     #31222,%0       ;IS HIGH ORDER = 31222
003334  001401                          BEQ     .+4
003336  000000                          HLT                     ;HIGH ORDER IS WRONG
003340  022701  026100                  CMP     #26100,%1       ;IS LOW ORDER = 26100
003344  001401                          BEQ     .+4
003346  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 36   MUL   100000 * #77777 = 140000 100000   PS = 11
                                ;*****************************************************************

003350  010701                          SCOPE                   ;TEST OF MULTIPLY
003352  012700  100000                  MOV     #100000,%0      ;LOAD MULTIPLICAN WITH 100000
003356  070027  077777                  MUL     #77777,%0       ;MULTIPLY 100000 * #77777
003362  013767  177776  011066          MOV     @#PS,PSW        ;SAVE PS
003370  122767  000011  011060          CMPB    #11,PSW         ;IS PS = 11
003376  001401                          BEQ     .+4
003400  000000                          HLT                     ;PS IS WRONG
003402  022700  140000                  CMP     #140000,%0      ;IS HIGH ORDER = 140000
003406  001401                          BEQ     .+4
003410  000000                          HLT                     ;HIGH ORDER IS WRONG
003412  022701  100000                  CMP     #100000,%1      ;IS LOW ORDER = 100000
003416  001401                          BEQ     .+4
003420  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 37   MUL   77777 * #100000 = 140000 100000   PS = 11
                                        ;*****************************************************************

003422  010701                          SCOPE                   ;TEST OF MULTIPLY
003424  012700  077777                  MOV     #77777,%0       ;LOAD MULTIPLICAN WITH 77777
003430  070027  100000                  MUL     #100000,%0      ;MULTIPLY 77777 * #100000
003434  013767  177776  011014          MOV     @#PS,PSW        ;SAVE PS
003442  122767  000011  011006          CMPB    #11,PSW         ;IS PS = 11
003450  001401                          BEQ     .+4
003452  000000                          HLT                     ;PS IS WRONG
003454  022700  140000                  CMP     #140000,%0      ;IS HIGH ORDER = 140000
003460  001401                          BEQ     .+4
003462  000000                          HLT                     ;HIGH ORDER IS WRONG
003464  022701  100000                  CMP     #100000,%011    ;IS LOW ORDER = 100000
003470  001401                          BEQ     .+4
003472  000000                          HLT                     ;LOW ORDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 40   MUL   157634 * #104031 = 7453 133074   PS = 1
                                        ;*****************************************************************

003474  010701                          SCOPE                   ;TEST OF MULTIPLY
003476  012700  157634                  MOV     #157634,%0      ;LOAD MULTIPLICAN WITH 157634
003502  070027  104031                  MUL     #104031,%0      ;MULTIPLY 157634 * #104031
003506  013767  177776  010742          MOV     @#PS,PSW        ;SAVE PS
003514  122767  000001  010734          CMPB    #1,PSW          ;IS PS = 1
003522  001401                          BEQ     .+4
003524  000000                          HLT                     ;PS IS WRONG
003526  022700  007453                  CMP     #7453,%0        ;IS HIGH ORDER = 7453
003532  001401                          BEQ     .+4
003534  000000                          HLT                     ;HIGH ORDER IS WRONG
003536  022701  133074                  CMP     #133074,%011    ;IS LOW ORDER = 133074
003542  001401                          BEQ     .+4
003544  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 41   MUL   104031 * #157634 = 7453 133074   PS = 1
                                ;*****************************************************************

003546  010701                          SCOPE                   ;TEST OF MULTIPLY
003550  012700  104031                  MOV     #104031,%0      ;LOAD MULTIPLICAN WITH 104031
003554  070027  157634                  MUL     #157634,%0      ;MULTIPLY 104031 * #157634
003560  013767  177776  010670          MOV     @#PS,PSW        ;SAVE PS
003566  122767  000001  010662          CMPB    #1,PSW          ;IS PS = 1
003574  001401                          BEQ     .+4
003576  000000                          HLT                     ;PS IS WRONG
003600  022700  007453                  CMP     #7453,%0        ;IS HIGH ORDER = 7453
003604  001401                          BEQ     .+4
003606  000000                          HLT                     ;HIGH ORDER IS WRONG
003610  022701  133074                  CMP     #133074,%1     ;IS LOW ORDER = 133074
003614  001401                          BEQ     .+4
003616  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 42   MUL   152210 * #0 = 0 0   PS = 4
                                ;*****************************************************************

003620  010701                          SCOPE                   ;TEST OF MULTIPLY
003622  012700  152210                  MOV     #152210,%0      ;LOAD MULTIPLICAN WITH 152210
003626  070027  000000                  MUL     #0,%0           ;MULTIPLY 152210 * #0
003632  013767  177776  010616          MOV     @#PS,PSW        ;SAVE PS
003640  122767  000004  010610          CMPB    #4,PSW          ;IS PS = 4
003646  001401                          BEQ     .+4
003650  000000                          HLT                     ;PS IS WRONG
003652  022700  000000                  CMP     #0,%0           ;IS HIGH ORDER = 0
003656  001401                          BEQ     .+4
003660  000000                          HLT                     ;HIGH ORDER IS WRONG
003662  022701  000000                  CMP     #0,%1          ;IS LOW ORDER = 0
003666  001401                          BEQ     .+4
003670  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 43   MUL   0 * #152210 = 0 0   PS = 4
                                        ;*****************************************************************

003672  010701                          SCOPE                   ;TEST OF MULTIPLY
003674  012700  000000                  MOV     #0,%0           ;LOAD MULTIPLICAN WITH 0
003700  070027  152210                  MUL     #152210,%0      ;MULTIPLY 0 * #152210
003704  013767  177776  010544          MOV     @#PS,PSW        ;SAVE PS
003712  122767  000004  010536          CMPB    #4;PSW          ;IS PS = 4
003720  001401                          BEQ     .+4
003722  000000                          HLT                     ;PS IS WRONG
003724  022700  000000                  CMP     #0,%0           ;IS HIGH ORDER = 0
003730  001401                          BEQ     .+4
003732  000000                          HLT                     ;HIGH ORDER IS WRONG
003734  022701  000000                  CMP     #0,%01          ;IS LOW ORDER = 0
003740  001401                          BEQ     .+4
003742  000000                          HLT                     ;LOW ORDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 44   MUL   -1 * #0 = 0 0   PS = 4
                                        ;*****************************************************************

003744  010701                          SCOPE                   ;TEST OF MULTIPLY
003746  012700  177777                  MOV     #-1,%0          ;LOAD MULTIPLICAN WITH -1
003752  070027  000000                  MUL     #0,%0           ;MULTIPLY -1 * #0
003756  013767  177776  010472          MOV     @#PS,PSW        ;SAVE PS
003764  122767  000004  010464          CMPB    #4,PSW          ;IS PS = 4
003772  001401                          BEQ     .+4
003774  000000                          HLT                     ;PS IS WRONG
003776  022700  000000                  CMP     #0,%0           ;IS HIGH ORDER = 0
004002  001401                          BEQ     .+4
004004  000000                          HLT                     ;HIGH ORDER IS WRONG
004006  022701  000000                  CMP     #0,%01          ;IS LOW ORDER = 0
004012  001401                          BEQ     .+4
004014  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 45   MUL   0 * #-1 = 0 0   PS = 4
                                ;*****************************************************************

004016  010701                          SCOPE                   ;TEST OF MULTIPLY
004020  012700  000000                  MOV     #0,%0           ;LOAD MULTIPLICAN WITH 0
004024  070027  177777                  MUL     #-1,%0          ;MULTIPLY 0 * #-1
004030  013767  177776  010420          MOV     @#PS,PSW        ;SAVE PS
004036  122767  000004  010412          CMPB    #4,PSW          ;IS PS = 4
004044  001401                          BEQ     .+4
004046  000000                          HLT                     ;PS IS WRONG
004050  022700  000000                  CMP     #0,%0           ;IS HIGH ORDER = 0
004054  001401                          BEQ     .+4
004056  000000                          HLT                     ;HIGH ORDER IS WRONG
004060  022701  000000                  CMP     #0,%0!1         ;IS LOW ORDER = 0
004064  001401                          BEQ     .+4
004066  000000                          HLT                     ;LOW ORDER IS WRONG


                                ;*****************************************************************
                                ;TEST 46   MUL   -1 * #1 = -1 -1   PS = 10
                                ;*****************************************************************

004070  010701                          SCOPE                   ;TEST OF MULTIPLY
004072  012701  177777                  MOV     #-1,%1          ;LOAD MULTIPLICAN WITH -1
004076  070127  000001                  MUL     #1,%1           ;MULTIPLY -1 * #1
004102  013767  177776  010346          MOV     @#PS,PSW        ;SAVE PS
004110  122767  000010  010340          CMPB    #10,PSW         ;IS PS = 10
004116  001401                          BEQ     .+4
004120  000000                          HLT                     ;PS IS WRONG
004122  022701  177777                  CMP     #-1,%1          ;IS HIGH ORDER = -1
004126  001401                          BEQ     .+4
004130  000000                          HLT                     ;HIGH ORDER IS WRONG
004132  022701  177777                  CMP     #-1,%1!1        ;IS LOW ORDER = -1
004136  001401                          BEQ     .+4
004140  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 47   MUL   -1 * #0 = 0 0   PS = 4
                                ;*****************************************************************

004142  010701                          SCOPE                   ;TEST OF MULTIPLY
004144  012701  177777                  MOV     #-1,%1          ;LOAD MULTIPLICAN WITH -1
004150  070127  000000                  MUL     #0,%1           ;MULTIPLY -1 * #0
004154  013767  177776  010274          MOV     @#PS,PSW        ;SAVE PS
004162  122767  000004  010266          CMPB    #4,PSW          ;IS PS = 4
004170  001401                          BEQ     .+4
004172  000000                          HLT                     ;PS IS WRONG
004174  022701  000000                  CMP     #0,%1           ;IS HIGH ORDER = 0
004200  001401                          BEQ     .+4
004202  000000                          HLT                     ;HIGH ORDER IS WRONG
004204  022701  000000                  CMP     #0,%1!1         ;IS LOW ORDER = 0
004210  001401                          BEQ     .+4
004212  000000                          HLT                     ;LOW ORDER IS WRONG


                                ;*****************************************************************
                                ;TEST 50   MUL   77777 * #100000 = 100000 100000   PS = 11
                                ;*****************************************************************

004214  010701                          SCOPE                   ;TEST OF MULTIPLY
004216  012701  077777                  MOV     #77777,%1       ;LOAD MULTIPLICAN WITH 77777
004222  070127  100000                  MUL     #100000,%1      ;MULTIPLY 77777 * #100000
004226  013767  177776  010222          MOV     @#PS,PSW        ;SAVE PS
004234  122767  000011  010214          CMPB    #11,PSW         ;IS PS = 11
004242  001401                          BEQ     .+4
004244  000000                          HLT                     ;PS IS WRONG
004246  022701  100000                  CMP     #100000,%1      ;IS HIGH ORDER = 100000
004252  001401                          BEQ     .+4
004254  000000                          HLT                     ;HIGH ORDER IS WRONG
004256  022701  100000                  CMP     #100000,%1!1    ;IS LOW ORDER = 100000
004262  001401                          BEQ     .+4
004264  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 51   MUL   -1 * #77777 = 100001 100001   PS = 10
                                ;*****************************************************************

004266  010701                          SCOPE                   ;TEST OF MULTIPLY
004270  012701  177777                  MOV     #-1,%1          ;LOAD MULTIPLICAN WITH -1
004274  070127  077777                  MUL     #77777,%1       ;MULTIPLY -1 * #77777
004300  013767  177776  010150          MOV     @#PS,PSW        ;SAVE PS
004306  122767  000010  010142          CMPB    #10,PSW         ;IS PS = 10
004314  001401                          BEQ     .+4
004316  000000                          HLT                     ;PS IS WRONG
004320  022701  100001                  CMP     #100001,%1      ;IS HIGH ORDER = 100001
004324  001401                          BEQ     .+4
004326  000000                          HLT                     ;HIGH ORDER IS WRONG
004330  022701  100001                  CMP     #100001,%1!1    ;IS LOW ORDER = 100001
004334  001401                          BEQ     .+4
004336  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 52   MUL   77777 * #77777 = 1 1   PS = 1
                                ;*****************************************************************

004340  010701                          SCOPE                   ;TEST OF MULTIPLY
004342  012701  077777                  MOV     #77777,%1       ;LOAD MULTIPLICAN WITH 77777
004346  070127  077777                  MUL     #77777,%1       ;MULTIPLY 77777 * #77777
004352  013767  177776  010076          MOV     @#PS,PSW        ;SAVE PS
004360  122767  000001  010070          CMPB    #1,PSW          ;IS PS = 1
004366  001401                          BEQ     .+4
004370  000000                          HLT                     ;PS IS WRONG
004372  022701  000001                  CMP     #1,%1           ;IS HIGH ORDER = 1
004376  001401                          BEQ     .+4
004400  000000                          HLT                     ;HIGH ORDER IS WRONG
004402  022701  000001                  CMP     #1,%1!1         ;IS LOW ORDER = 1
004406  001401                          BEQ     .+4
004410  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 53   MUL   2 * #2 = 4 4   PS = 0
                                ;*****************************************************************

004412  010701                          SCOPE                   ;TEST OF MULTIPLY
004414  012701  000002                  MOV     #2,%1           ;LOAD MULTIPLICAN WITH 2
004420  070127  000002                  MUL     #2,%1           ;MULTIPLY 2 * #2
004424  013767  177776  010024          MOV     @#PS,PSW        ;SAVE PS
004432  122767  000000  010016          CMPB    #0,PSW          ;IS PS = 0
004440  001401                          BEQ     .+4
004442  000000                          HLT                     ;PS IS WRONG
004444  022701  000004                  CMP     #4,%1           ;IS HIGH ORDER = 4
004450  001401                          BEQ     .+4
004452  000000                          HLT                     ;HIGH ORDER IS WRONG
004454  022701  000004                  CMP     #4,%1!1         ;IS LOW ORDER = 4
004460  001401                          BEQ     .+4
004462  000000                          HLT                     ;LOW ORDER IS WRONG


                                ;*****************************************************************
                                ;TEST 54   MUL   0 * #0 = 0 0   PS = 4
                                ;*****************************************************************

004464  010701                          SCOPE                   ;TEST OF MULTIPLY
004466  012702  000000                  MOV     #0,%2           ;LOAD MULTIPLICAN WITH 0
004472  070227  000000                  MUL     #0,%2           ;MULTIPLY 0 * #0
004476  013767  177776  007752          MOV     @#PS,PSW        ;SAVE PS
004504  122767  000004  007744          CMPB    #4,PSW          ;IS PS = 4
004512  001401                          BEQ     .+4
004514  000000                          HLT                     ;PS IS WRONG
004516  022702  000000                  CMP     #0,%2           ;IS HIGH ORDER = 0
004522  001401                          BEQ     .+4
004524  000000                          HLT                     ;HIGH ORDER IS WRONG
004526  022703  000000                  CMP     #0,%2!1         ;IS LOW ORDER = 0
004532  001401                          BEQ     .+4
004534  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 55   MUL   0 * #1 = 0 0   PS = 4
                                        ;*****************************************************************

004536  010701                          SCOPE                   ;TEST OF MULTIPLY
004540  012702  000000                  MOV     #0,%2           ;LOAD MULTIPLICAN WITH 0
004544  070227  000001                  MUL     #1,%2           ;MULTIPLY 0 * #1
004550  013767  177776  007700          MOV     @#PS,PSW        ;SAVE PS
004556  122767  000004  007672          CMPB    #4,PSW          ;IS PS = 4
004564  001401                          BEQ     .+4
004566  000000                          HLT                     ;PS IS WRONG
004570  022702  000000                  CMP     #0,%2           ;IS HIGH ORDER = 0
004574  001401                          BEQ     .+4
004576  000000                          HLT                     ;HIGH ORDER IS WRONG
004600  022703  000000                  CMP     #0,%2+1         ;IS LOW ORDER = 0
004604  001401                          BEQ     .+4
004606  000000                          HLT                     ;LOW ORDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 56   MUL   1 * #0 = 0 0   PS = 4
                                        ;*****************************************************************

004610  010701                          SCOPE                   ;TEST OF MULTIPLY
004612  012702  000001                  MOV     #1,%2           ;LOAD MULTIPLICAN WITH 1
004616  070227  000000                  MUL     #0,%2           ;MULTIPLY 1 * #0
004622  013767  177776  007626          MOV     @#PS,PSW        ;SAVE PS
004630  122767  000004  007620          CMPB    #4,PSW          ;IS PS = 4
004636  001401                          BEQ     .+4
004640  000000                          HLT                     ;PS IS WRONG
004642  022702  000000                  CMP     #0,%2           ;IS HIGH ORDER = 0
004646  001401                          BEQ     .+4
004650  000000                          HLT                     ;HIGH ORDER IS WRONG
004652  022703  000000                  CMP     #0,%2+1         ;IS LOW ORDER = 0
004656  001401                          BEQ     .+4
004660  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 57   MUL   -1 * #1 = -1 -1   PS = 10
                                ;*****************************************************************

004662  010701                          SCOPE                   ;TEST OF MULTIPLY
004664  012702  177777                  MOV     #-1,%2          ;LOAD MULTIPLICAN WITH -1
004670  070227  000001                  MUL     #1,%2           ;MULTIPLY -1 * #1
004674  013767  177776  007554          MOV     @#PS,PSW        ;SAVE PS
004702  122767  000010  007546          CMPB    #10,PSW         ;IS PS = 10
004710  001401                          BEQ     .+4
004712  000000                          HLT                     ;PS IS WRONG
004714  022702  177777                  CMP     #-1,%2          ;IS HIGH ORDER = -1
004720  001401                          BEQ     .+4
004722  000000                          HLT                     ;HIGH ORDER IS WRONG
004724  022703  177777                  CMP     #-1,%2!1        ;IS LOW ORDER = -1
004730  001401                          BEQ     .+4
004732  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 60   MUL   1 * #-1 = -1 -1   PS = 10
                                ;*****************************************************************

004734  010701                          SCOPE                   ;TEST OF MULTIPLY
004736  012702  000001                  MOV     #1,%2           ;LOAD MULTIPLICAN WITH 1
004742  070227  177777                  MUL     #-1,%2          ;MULTIPLY 1 * #-1
004746  013767  177776  007502          MOV     @#PS,PSW        ;SAVE PS
004754  122767  000010  007474          CMPB    #10,PSW         ;IS PS = 10
004762  001401                          BEQ     .+4
004764  000000                          HLT                     ;PS IS WRONG
004766  022702  177777                  CMP     #-1,%2          ;IS HIGH ORDER = -1
004772  001401                          BEQ     .+4
004774  000000                          HLT                     ;HIGH ORDER IS WRONG
004776  022703  177777                  CMP     #-1,%2!1        ;IS LOW ORDER = -1
005002  001401                          BEQ     .+4
005004  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 61   MUL   1 * #2 = 0 2   PS = 0
                                ;*****************************************************************

005006  010701                          SCOPE                   ;TEST OF MULTIPLY
005010  012702  000001                  MOV     #1,%2           ;LOAD MULTIPLICAN WITH 1
005014  070227  000002                  MUL     #2,%2           ;MULTIPLY 1 * #2
005020  013767  177776  007430          MOV     @#PS,PSW        ;SAVE PS
005026  122767  000000  007422          CMPB    #0,PSW          ;IS PS = 0
005034  001401                          BEQ     .+4
005036  000000                          HLT                     ;PS IS WRONG
005040  022702  000000                  CMP     #0,%2           ;IS HIGH ORDER = 0
005044  001401                          BEQ     .+4
005046  000000                          HLT                     ;HIGH ORDER IS WRONG
005050  022703  000002                  CMP     #2,%2!1         ;IS LOW ORDER = 2
005054  001401                          BEQ     .+4
005056  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 62   MUL   2 * #2 = 0 4   PS = 0
                                ;*****************************************************************

005060  010701                          SCOPE                   ;TEST OF MULTIPLY
005062  012702  000002                  MOV     #2,%2           ;LOAD MULTIPLICAN WITH 2
005066  070227  000002                  MUL     #2,%2           ;MULTIPLY 2 * #2
005072  013767  177776  007356          MOV     @#PS,PSW        ;SAVE PS
005100  122767  000000  007350          CMPB    #0,PSW          ;IS PS = 0
005106  001401                          BEQ     .+4
005110  000000                          HLT                     ;PS IS WRONG
005112  022702  000000                  CMP     #0,%2           ;IS HIGH ORDER = 0
005116  001401                          BEQ     .+4
005120  000000                          HLT                     ;HIGH ORDER IS WRONG
005122  022703  000004                  CMP     #4,%2!1         ;IS LOW ORDER = 4
005126  001401                          BEQ     .+4
005130  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 63   MUL   1000 * #200 = 1 0   PS = 1
                                ;*****************************************************************

005132  010701                          SCOPE                   ;TEST OF MULTIPLY
005134  012702  001000                  MOV     #1000,%2        ;LOAD MULTIPLICAN WITH 1000
005140  070227  000200                  MUL     #200,%2         ;MULTIPLY 1000 * #200
005144  013767  177776  007304          MOV     @#PS,PSW        ;SAVE PS
005152  122767  000001  007276          CMPB    #1,PSW          ;IS PS = 1
005160  001401                          BEQ     .+4
005162  000000                          HLT                     ;PS IS WRONG
005164  022702  000001                  CMP     #1,%2           ;IS HIGH ORDER = 1
005170  001401                          BEQ     .+4
005172  000000                          HLT                     ;HIGH ORDER IS WRONG
005174  022703  000000                  CMP     #0,%2!1         ;IS LOW ORDER = 0
005200  001401                          BEQ     .+4
005202  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 64   MUL   200 * #1000 = 1 0   PS = 1
                                ;*****************************************************************

005204  010701                          SCOPE                   ;TEST OF MULTIPLY
005206  012702  000200                  MOV     #200,%2         ;LOAD MULTIPLICAN WITH 200
005212  070227  001000                  MUL     #1000,%2        ;MULTIPLY 200 * #1000
005216  013767  177776  007232          MOV     @#PS,PSW        ;SAVE PS
005224  122767  000001  007224          CMPB    #1,PSW          ;IS PS = 1
005232  001401                          BEQ     .+4
005234  000000                          HLT                     ;PS IS WRONG
005236  022702  000001                  CMP     #1,%2           ;IS HIGH ORDER = 1
005242  001401                          BEQ     .+4
005244  000000                          HLT                     ;HIGH ORDER IS WRONG
005246  022703  000000                  CMP     #0,%2!1         ;IS LOW ORDER = 0
005252  001401                          BEQ     .+4
005254  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 65   MUL   77777 * #2 = 0 177776   PS = 1
                                ;*****************************************************************

005256  010701                          SCOPE                   ;TEST OF MULTIPLY
005260  012702  077777                  MOV     #77777,%2       ;LOAD MULTIPLICAN WITH 77777
005264  070227  000002                  MUL     #2,%2           ;MULTIPLY 77777 * #2
005270  013767  177776  007160          MOV     @#PS,PSW        ;SAVE PS
005276  122767  000021  007152          CMPB    #1,PSW          ;IS PS = 1
005304  001401                          BEQ     .+4
005306  000000                          HLT                     ;PS IS WRONG
005310  022702  000000                  CMP     #0,%2           ;IS HIGH ORDER = 0
005314  001401                          BEQ     .+4
005316  000000                          HLT                     ;HIGH ORDER IS WRONG
005320  022703  177776                  CMP     #177776,%2!1    ;IS LOW ORDER = 177776
005324  001401                          BEQ     .+4
005326  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 66   MUL   2 * #77777 = 0 177776   PS = 1
                                ;*****************************************************************

005330  010701                          SCOPE                   ;TEST OF MULTIPLY
005332  012702  000002                  MOV     #2,%2           ;LOAD MULTIPLICAN WITH 2
005336  070227  077777                  MUL     #77777,%2       ;MULTIPLY 2 * #77777
005342  013767  177776  007106          MOV     @#PS,PSW        ;SAVE PS
005350  122767  000021  007100          CMPB    #1,PSW          ;IS PS = 1
005356  001401                          BEQ     .+4
005360  000000                          HLT                     ;PS IS WRONG
005362  022702  000000                  CMP     #0,%2           ;IS HIGH ORDER = 0
005366  001401                          BEQ     .+4
005370  000000                          HLT                     ;HIGH ORDER IS WRONG
005372  022703  177776                  CMP     #177776,%2!1    ;IS LOW ORDER = 177776
005376  001401                          BEQ     .+4
005400  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 67   MUL   7777 * #10 = 0 77770   PS = 0
                                        ;*****************************************************************

005402  010701                          SCOPE                   ;TEST OF MULTIPLY
005404  012702  007777                  MOV     #7777,%2        ;LOAD MULTIPLICAN WITH 7777
005410  070227  000010                  MUL     #10,%2          ;MULTIPLY 7777 * #10
005414  013767  177776  007034          MOV     @#PS,PSW        ;SAVE PS
005422  122767  000000  007026          CMPB    #0,PSW          ;IS PS = 0
005430  001401                          BEQ     .+4
005432  000000                          HLT                     ;PS IS WRONG
005434  022702  000000                  CMP     #0,%2           ;IS HIGH ORDER = 0
005440  001401                          BEQ     .+4
005442  000000                          HLT                     ;HIGH ORDER IS WRONG
005444  022703  077770                  CMP     #77770,%211     ;IS LOW ORDER = 77770
005450  001401                          BEQ     .+4
005452  000000                          HLT                     ;LOW ORDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 70   MUL   10 * #7777 = 0 77770   PS = 0
                                        ;*****************************************************************

005454  010701                          SCOPE                   ;TEST OF MULTIPLY
005456  012702  000010                  MOV     #10,%2          ;LOAD MULTIPLICAN WITH 10
005462  070227  007777                  MUL     #7777,%2        ;MULTIPLY 10 * #7777
005466  013767  177776  006762          MOV     @#PS,PSW        ;SAVE PS
005474  122767  000000  006754          CMPB    #0,PSW          ;IS PS = 0
005502  001401                          BEQ     .+4
005504  000000                          HLT                     ;PS IS WRONG
005506  022702  000000                  CMP     #0,%2           ;IS HIGH ORDER = 0
005512  001401                          BEQ     .+4
005514  000000                          HLT                     ;HIGH ORDER IS WRONG
005516  022703  077770                  CMP     #77770,%211     ;IS LOW ORDER = 77770
005522  001401                          BEQ     .+4
005524  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 71   MUL   77777 * #77777 = 37777 1   PS = 1
                                ;*****************************************************************

005526  010701                          SCOPE                   ;TEST OF MULTIPLY
005530  012702  077777                  MOV     #77777,%2       ;LOAD MULTIPLICAN WITH 77777
005534  070227  077777                  MUL     #77777,%2       ;MULTIPLY 77777 * #77777
005540  013767  177776  006710          MOV     @#PS,PSW        ;SAVE PS
005546  122767  000001  006702          CMPB    #1,PSW          ;IS PS = 1
005554  001401                          BEQ     .+4
005556  000000                          HLT                     ;PS IS WRONG
005560  022702  037777                  CMP     #37777,%2       ;IS HIGH ORDER = 37777
005564  001401                          BEQ     .+4
005566  000000                          HLT                     ;HIGH ORDER IS WRONG
005570  022703  000001                  CMP     #1,%2!1         ;IS LOW ORDER = 1
005574  001401                          BEQ     .+4
005576  000000                          HLT                     ;LOW ORDER IS WRONG


                                ;*****************************************************************
                                ;TEST 72   MUL   77777 * #1 = 0 77777   PS = 0
                                ;*****************************************************************

005600  010701                          SCOPE                   ;TEST OF MULTIPLY
005602  012702  077777                  MOV     #77777,%2       ;LOAD MULTIPLICAN WITH 77777
005606  070227  000001                  MUL     #1,%2           ;MULTIPLY 77777 * #1
005612  013767  177776  006636          MOV     @#PS,PSW        ;SAVE PS
005620  122767  000000  006630          CMPB    #0,PSW          ;IS PS = 0
005626  001401                          BEQ     .+4
005630  000000                          HLT                     ;PS IS WRONG
005632  022702  000000                  CMP     #0,%2           ;IS HIGH ORDER = 0
005636  001401                          BEQ     .+4
005640  000000                          HLT                     ;HIGH ORDER IS WRONG
005642  022703  077777                  CMP     #77777,%2!1     ;IS LOW ORDER = 77777
005646  001401                          BEQ     .+4
005650  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 73   MUL   1 * #77777 = 0 77777   PS = 0
                                ;*****************************************************************

005652  010701                          SCOPE                   ;TEST OF MULTIPLY
005654  012702  000001                  MOV     #1,%2           ;LOAD MULTIPLICAN WITH 1
005660  070227  077777                  MUL     #77777,%2       ;MULTIPLY 1 * #77777
005664  013767  177776  006564          MOV     @#PS,PSW        ;SAVE PS
005672  122767  000000  006556          CMPB    #0,PSW          ;IS PS = 0
005700  001401                          BEQ     .+4
005702  000000                          HLT                     ;PS IS WRONG
005704  022702  000000                  CMP     #0,%2           ;IS HIGH ORDER = 0
005710  001401                          BEQ     .+4
005712  000000                          HLT                     ;HIGH ORDER IS WRONG
005714  022703  077777                  CMP     #77777,%211     ;IS LOW ORDER = 77777
005720  001401                          BEQ     .+4
005722  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 74   MUL   77777 * #-1 = -1 100001   PS = 10
                                ;*****************************************************************

005724  010701                          SCOPE                   ;TEST OF MULTIPLY
005726  012702  077777                  MOV     #77777,%2       ;LOAD MULTIPLICAN WITH 77777
005732  070227  177777                  MUL     #-1,%2          ;MULTIPLY 77777 * #-1
005736  013767  177776  006512          MOV     @#PS,PSW        ;SAVE PS
005744  122767  000010  006504          CMPB    #10,PSW         ;IS PS = 10
005752  001401                          BEQ     .+4
005754  000000                          HLT                     ;PS IS WRONG
005756  022702  177777                  CMP     #-1,%2          ;IS HIGH ORDER = -1
005762  001401                          BEQ     .+4
005764  000000                          HLT                     ;HIGH ORDER IS WRONG
005766  022703  100001                  CMP     #100001,%211    ;IS LOW ORDER = 100001
005772  001401                          BEQ     .+4
005774  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 75   MUL   -1 * #77777 = -1 100001   PS = 10
                                        ;*****************************************************************

005776  010701                          SCOPE                   ;TEST OF MULTIPLY
006000  012702  177777                  MOV     #-1,%2          ;LOAD MULTIPLICAN WITH -1
006004  070227  077777                  MUL     #77777,%2       ;MULTIPLY -1 * #77777
006010  013767  177776  006440          MOV     @#PS,PSW        ;SAVE PS
006016  122767  000010  006432          CMPB    #10,PSW         ;IS PS = 10
006024  001401                          BEQ     .+4
006026  000000                          HLT                     ;PS IS WRONG
006030  022702  177777                  CMP     #-1,%2          ;IS HIGH ORDER = -1
006034  001401                          BEQ     .+4
006036  000000                          HLT                     ;HIGH ORDER IS WRONG
006040  022703  100001                  CMP     #100001,%211    ;IS LOW ORDER = 100001
006044  001401                          BEQ     .+4
006046  000000                          HLT                     ;LOW ORDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 76   MUL   -2 * #77777 = -1 2   PS = 11
                                        ;*****************************************************************

006050  010701                          SCOPE                   ;TEST OF MULTIPLY
006052  012702  177776                  MOV     #-2,%2          ;LOAD MULTIPLICAN WITH -2
006056  070227  077777                  MUL     #77777,%2       ;MULTIPLY -2 * #77777
006062  013767  177776  006366          MOV     @#PS,PSW        ;SAVE PS
006070  122767  000011  006360          CMPB    #11,PSW         ;IS PS = 11
006076  001401                          BEQ     .+4
006100  000000                          HLT                     ;PS IS WRONG
006102  022702  177777                  CMP     #-1,%2          ;IS HIGH ORDER = -1
006106  001401                          BEQ     .+4
006110  000000                          HLT                     ;HIGH ORDER IS WRONG
006112  022703  000002                  CMP     #2,%211         ;IS LOW ORDER = 2
006116  001401                          BEQ     .+4
006120  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 77   MUL   77777 * #-2 = -1 2   PS = 11
                                        ;*****************************************************************

006122  010701                          SCOPE                   ;TEST OF MULTIPLY
006124  012702  077777                  MOV     #77777,%2       ;LOAD MULTIPLICAN WITH 77777
006130  070227  177776                  MUL     #-2,%2          ;MULTIPLY 77777 * #-2
006134  013767  177776  006314          MOV     @#PS,PSW        ;SAVE PS
006142  122767  000011  006306          CMPB    #11,PSW         ;IS PS = 11
006150  001401                          BEQ     .+4
006152  000000                          HLT                     ;PS IS WRONG
006154  022702  177777                  CMP     #-1,%2          ;IS HIGH ORDER = -1
006160  001401                          BEQ     .+4
006162  000000                          HLT                     ;HIGH ORDER IS WRONG
006164  022703  000002                  CMP     #2,%2!1         ;IS LOW ORDER = 2
006170  001401                          BEQ     .+4
006172  000000                          HLT                     ;LOW ORDER IS WRONG

                                        ;*****************************************************************
                                        ;TEST 100   MUL   125252 * #2 = -1 52524   PS = 11
                                        ;*****************************************************************

006174  010701                          SCOPE                   ;TEST OF MULTIPLY
006176  012702  125252                  MOV     #125252,%2      ;LOAD MULTIPLICAN WITH 125252
006202  070227  000002                  MUL     #2,%2           ;MULTIPLY 125252 * #2
006206  013767  177776  006242          MOV     @#PS,PSW        ;SAVE PS
006214  122767  000011  006234          CMPB    #11,PSW         ;IS PS = 11
006222  001401                          BEQ     .+4
006224  000000                          HLT                     ;PS IS WRONG
006226  022702  177777                  CMP     #-1,%2          ;IS HIGH ORDER = -1
006232  001401                          BEQ     .+4
006234  000000                          HLT                     ;HIGH ORDER IS WRONG
006236  022703  052524                  CMP     #52524,%2!1     ;IS LOW ORDER = 52524
006242  001401                          BEQ     .+4
006244  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 101   MUL   2 * #125252 = -1 52524   PS = 11
                                ;*****************************************************************

006246  010701                          SCOPE                   ;TEST OF MULTIPLY
006250  012702  000002                  MOV     #2,%2           ;LOAD MULTIPLICAN WITH 2
006254  070227  125252                  MUL     #125252,%2      ;MULTIPLY 2 * #125252
006260  013767  177776  006170          MOV     @#PS,PSW        ;SAVE PS
006266  122767  000011  006162          CMPB    #11,PSW         ;IS PS = 11
006274  001401                          BEQ     .+4
006276  000000                          HLT                     ;PS IS WRONG
006300  022702  177777                  CMP     #-1,%2          ;IS HIGH ORDER = -1
006304  001401                          BEQ     .+4
006306  000000                          HLT                     ;HIGH ORDER IS WRONG
006310  022703  052524                  CMP     #52524,%211     ;IS LOW ORDER = 52524
006314  001401                          BEQ     .+4
006316  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 102   MUL   52525 * #2 = 0 125252   PS = 1
                                ;*****************************************************************

006320  010701                          SCOPE                   ;TEST OF MULTIPLY
006322  012702  052525                  MOV     #52525,%2       ;LOAD MULTIPLICAN WITH 52525
006326  070227  000002                  MUL     #2,%2           ;MULTIPLY 52525 * #2
006332  013767  177776  006116          MOV     @#PS,PSW        ;SAVE PS
006340  122767  000021  006110          CMPB    #1,PSW          ;IS PS = 1
006346  001401                          BEQ     .+4
006350  000000                          HLT                     ;PS IS WRONG
006352  022702  000000                  CMP     #0,%2           ;IS HIGH ORDER = 0
006356  001401                          BEQ     .+4
006360  000000                          HLT                     ;HIGH ORDER IS WRONG
006362  022703  125252                  CMP     #125252,%211    ;IS LOW ORDER = 125252
006366  001401                          BEQ     .+4
006370  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 103   MUL   2 * #52525 = 0 125252   PS = 1
                                        ;*****************************************************************

006372  010701                          SCOPE                   ;TEST OF MULTIPLY
006374  012702  000002                  MOV     #2,%2           ;LOAD MULTIPLICAN WITH 2
006400  070227  052525                  MUL     #52525,%2       ;MULTIPLY 2 * #52525
006404  013767  177776  006044          MOV     @#PS,PSW        ;SAVE PS
006412  122767  000001  006036          CMPB    #1,PSW          ;IS PS = 1
006420  001401                          BEQ     .+4
006422  000000                          HLT                     ;PS IS WRONG
006424  022702  000000                  CMP     #0,%2           ;IS HIGH ORDER = 0
006430  001401                          BEQ     .+4
006432  000000                          HLT                     ;HIGH ORDER IS WRONG
006434  022703  125252                  CMP     #125252,%2!1    ;IS LOW ORDER = 125252
006440  001401                          BEQ     .+4
006442  000000                          HLT                     ;LOW ORDER IS WRONG

                                        ;*****************************************************************
                                        ;TEST 104   MUL   125252 * #40000 = 165252 100000   PS = 11
                                        ;*****************************************************************

006444  010701                          SCOPE                   ;TEST OF MULTIPLY
006446  012702  125252                  MOV     #125252,%2      ;LOAD MULTIPLICAN WITH 125252
006452  070227  040000                  MUL     #40000,%2       ;MULTIPLY 125252 * #40000
006456  013767  177776  005772          MOV     @#PS,PSW        ;SAVE PS
006464  122767  000011  005764          CMPB    #11,PSW         ;IS PS = 11
006472  001401                          BEQ     .+4
006474  000000                          HLT                     ;PS IS WRONG
006476  022702  165252                  CMP     #165252,%2      ;IS HIGH ORDER = 165252
006502  001401                          BEQ     .+4
006504  000000                          HLT                     ;HIGH ORDER IS WRONG
006506  022703  100000                  CMP     #100000,%2!1    ;IS LOW ORDER = 100000
006512  001401                          BEQ     .+4
006514  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 105   MUL   40000 * #125252 = 165252 100000   PS = 11
                                        ;*****************************************************************

006516  010701                          SCOPE                   ;TEST OF MULTIPLY
006520  012702  040000                  MOV     #40000,%2       ;LOAD MULTIPLICAN WITH 40000
006524  070227  125252                  MUL     #125252,%2      ;MULTIPLY 40000 * #125252
006530  013767  177776  005720          MOV     @#PS,PSW        ;SAVE PS
006536  122767  000011  005712          CMPB    #11,PSW         ;IS PS = 11
006544  001401                          BEQ     .+4
006546  000000                          HLT                     ;PS IS WRONG
006550  022702  165252                  CMP     #165252,%2      ;IS HIGH ORDER = 165252
006554  001401                          BEQ     .+4
006556  000000                          HLT                     ;HIGH ORDER IS WRONG
006560  022703  100000                  CMP     #100000,%211    ;IS LOW ORDER = 100000
006564  001401                          BEQ     .+4
006566  000000                          HLT                     ;LOW ORDER IS WRONG

                                        ;*****************************************************************
                                        ;TEST 106   MUL   100000 * #100000 = 40000 0   PS = 1
                                        ;*****************************************************************

006570  010701                          SCOPE                   ;TEST OF MULTIPLY
006572  012702  100000                  MOV     #100000,%2      ;LOAD MULTIPLICAN WITH 100000
006576  070227  100000                  MUL     #100000,%2      ;MULTIPLY 100000 * #100000
006602  013767  177776  005646          MOV     @#PS,PSW        ;SAVE PS
006610  122767  000001  005640          CMPB    #1,PSW          ;IS PS = 1
006616  001401                          BEQ     .+4
006620  000000                          HLT                     ;PS IS WRONG
006622  022702  040000                  CMP     #40000,%2       ;IS HIGH ORDER = 40000
006626  001401                          BEQ     .+4
006630  000000                          HLT                     ;HIGH ORDER IS WRONG
006632  022703  000000                  CMP     #0,%211         ;IS LOW ORDER = 0
006636  001401                          BEQ     .+4
006640  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 107   MUL   70707 * #70707 = 31221 44261   PS = 1
                                        ;*****************************************************************

006642  010701                          SCOPE                   ;TEST OF MULTIPLY
006644  012702  070707                  MOV     #70707,%2       ;LOAD MULTIPLICAN WITH 70707
006650  070227  070707                  MUL     #70707,%2       ;MULTIPLY 70707 * #70707
006654  013767  177776  005574          MOV     @#PS,PSW        ;SAVE PS
006662  122767  000001  005566          CMPB    #1,PSW          ;IS PS = 1
006670  001401                          BEQ     .+4
006672  000000                          HLT                     ;PS IS WRONG
006674  022702  031221                  CMP     #31221,%2       ;IS HIGH ORDER = 31221
006700  001401                          BEQ     .+4
006702  000000                          HLT                     ;HIGH ORDER IS WRONG
006704  022703  044261                  CMP     #44261,%211     ;IS LOW ORDER = 44261
006710  001401                          BEQ     .+4
006712  000000                          HLT                     ;LOW ORDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 110   MUL   107070 * #107070 = 31222 26100   PS = 1
                                        ;*****************************************************************

006714  010701                          SCOPE                   ;TEST OF MULTIPLY
006716  012702  107070                  MOV     #107070,%2      ;LOAD MULTIPLICAN WITH 107070
006722  070227  107070                  MUL     #107070,%2      ;MULTIPLY 107070 * #107070
006726  013767  177776  005522          MOV     @#PS,PSW        ;SAVE PS
006734  122767  000001  005514          CMPB    #1,PSW          ;IS PS = 1
006742  001401                          BEQ     .+4
006744  000000                          HLT                     ;PS IS WRONG
006746  022702  031222                  CMP     #31222,%2       ;IS HIGH ORDER = 31222
006752  001401                          BEQ     .+4
006754  000000                          HLT                     ;HIGH ORDER IS WRONG
006756  022703  026100                  CMP     #26100,%211     ;IS LOW ORDER = 26100
006762  001401                          BEQ     .+4
006764  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 111   MUL   100000 * #77777 = 140000 100000   PS = 11
                                ;*****************************************************************

006766  010701                          SCOPE                   ;TEST OF MULTIPLY
006770  012702  100000                  MOV     #100000,%2      ;LOAD MULTIPLICAN WITH 100000
006774  070227  077777                  MUL     #77777,%2       ;MULTIPLY 100000 * #77777
007000  013767  177776  005450          MOV     @#PS,PSW        ;SAVE PS
007006  122767  000011  005442          CMPB    #11,PSW         ;IS PS = 11
007014  001401                          BEQ     .+4
007016  000000                          HLT                     ;PS IS WRONG
007020  022702  140000                  CMP     #140000,%2      ;IS HIGH ORDER = 140000
007024  001401                          BEQ     .+4
007026  000000                          HLT                     ;HIGH ORDER IS WRONG
007030  022703  100000                  CMP     #100000,%2!1    ;IS LOW ORDER = 100000
007034  001401                          BEQ     .+4
007036  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 112   MUL   77777 * #100000 = 140000 100000   PS = 11
                                ;*****************************************************************

007040  010701                          SCOPE                   ;TEST OF MULTIPLY
007042  012702  077777                  MOV     #77777,%2       ;LOAD MULTIPLICAN WITH 77777
007046  070227  100000                  MUL     #100000,%2      ;MULTIPLY 77777 * #100000
007052  013767  177776  005376          MOV     @#PS,PSW        ;SAVE PS
007060  122767  000011  005370          CMPB    #11,PSW         ;IS PS = 11
007066  001401                          BEQ     .+4
007070  000000                          HLT                     ;PS IS WRONG
007072  022702  140000                  CMP     #140000,%2      ;IS HIGH ORDER = 140000
007076  001401                          BEQ     .+4
007100  000000                          HLT                     ;HIGH ORDER IS WRONG
007102  022703  100000                  CMP     #100000,%2!1    ;IS LOW ORDER = 100000
007106  001401                          BEQ     .+4
007110  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 113   MUL   157634 * #104031 = 7453 133074   PS = 1
                                ;*****************************************************************

007112  010701                          SCOPE                   ;TEST OF MULTIPLY
007114  012702  157634                  MOV     #157634,%2      ;LOAD MULTIPLICAN WITH 157634
007120  070227  104031                  MUL     #104031,%2      ;MULTIPLY 157634 * #104031
007124  013767  177776  005324          MOV     @#PS,PSW        ;SAVE PS
007132  122767  000001  005316          CMPB    #1,PSW          ;IS PS = 1
007140  001401                          BEQ     .+4
007142  000000                          HLT                     ;PS IS WRONG
007144  022702  007453                  CMP     #7453,%2        ;IS HIGH ORDER = 7453
007150  001401                          BEQ     .+4
007152  000000                          HLT                     ;HIGH ORDER IS WRONG
007154  022703  133074                  CMP     #133074,%2!1    ;IS LOW ORDER = 133074
007160  001401                          BEQ     .+4
007162  000000                          HLT                     ;LOW ORDER IS WRONG


                                ;*****************************************************************
                                ;TEST 114   MUL   104031 * #157634 = 7453 133074   PS = 1
                                ;*****************************************************************

007164  010701                          SCOPE                   ;TEST OF MULTIPLY
007166  012702  104031                  MOV     #104031,%2      ;LOAD MULTIPLICAN WITH 104031
007172  070227  157634                  MUL     #157634,%2      ;MULTIPLY 104031 * #157634
007176  013767  177776  005252          MOV     @#PS,PSW        ;SAVE PS
007204  122767  000001  005244          CMPB    #1,PSW          ;IS PS = 1
007212  001401                          BEQ     .+4
007214  000000                          HLT                     ;PS IS WRONG
007216  022702  007453                  CMP     #7453,%2        ;IS HIGH ORDER = 7453
007222  001401                          BEQ     .+4
007224  000000                          HLT                     ;HIGH ORDER IS WRONG
007226  022703  133074                  CMP     #133074,%2!1    ;IS LOW ORDER = 133074
007232  001401                          BEQ     .+4
007234  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 115   MUL   152210 * #0 = 0 0   PS = 4
                                ;*****************************************************************

007236  010701                          SCOPE                   ;TEST OF MULTIPLY
007240  012702  152210                  MOV     #152210,%2      ;LOAD MULTIPLICAN WITH 152210
007244  070227  000000                  MUL     #0,%2           ;MULTIPLY 152210 * #0
007250  013767  177776  005200          MOV     @#PS,PSW        ;SAVE PS
007256  122767  000004  005172          CMPB    #4,PSW          ;IS PS = 4
007264  001401                          BEQ     .+4
007266  000000                          HLT                     ;PS IS WRONG
007270  022702  000000                  CMP     #0,%2           ;IS HIGH ORDER = 0
007274  001401                          BEQ     .+4
007276  000000                          HLT                     ;HIGH ORDER IS WRONG
007300  022703  000000                  CMP     #0,%211         ;IS LOW ORDER = 0
007304  001401                          BEQ     .+4
007306  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 116   MUL   0 * #152210 = 0 0   PS = 4
                                ;*****************************************************************

007310  010701                          SCOPE                   ;TEST OF MULTIPLY
007312  012702  000000                  MOV     #0,%2           ;LOAD MULTIPLICAN WITH 0
007316  070227  152210                  MUL     #152210,%2      ;MULTIPLY 0 * #152210
007322  013767  177776  005126          MOV     @#PS,PSW        ;SAVE PS
007330  122767  000004  005120          CMPB    #4,PSW          ;IS PS = 4
007336  001401                          BEQ     .+4
007340  000000                          HLT                     ;PS IS WRONG
007342  022702  000000                  CMP     #0,%2           ;IS HIGH ORDER = 0
007346  001401                          BEQ     .+4
007350  000000                          HLT                     ;HIGH ORDER IS WRONG
007352  022703  000000                  CMP     #0,%211         ;IS LOW ORDER = 0
007356  001401                          BEQ     .+4
007360  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 117   MUL   -1 * #0 = 0 0   PS = 4
                                ;*****************************************************************

007362  010701                          SCOPE                   ;TEST OF MULTIPLY
007364  012702  177777                  MOV     #-1,%2          ;LOAD MULTIPLICAN WITH -1
007370  070227  000000                  MUL     #0,%2           ;MULTIPLY -1 * #0
007374  013767  177776  005054          MOV     @#PS,PSW        ;SAVE PS
007402  122767  000004  005046          CMPB    #4,PSW          ;IS PS = 4
007410  001401                          BEQ     .+4
007412  000000                          HLT                     ;PS IS WRONG
007414  022702  000000                  CMP     #0,%2           ;IS HIGH ORDER = 0
007420  001401                          BEQ     .+4
007422  000000                          HLT                     ;HIGH ORDER IS WRONG
007424  022703  000000                  CMP     #0,%211         ;IS LOW ORDER = 0
007430  001401                          BEQ     .+4
007432  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 120   MUL   0 * #-1 = 0 0   PS = 4
                                ;*****************************************************************

007434  010701                          SCOPE                   ;TEST OF MULTIPLY
007436  012702  000000                  MOV     #0,%2           ;LOAD MULTIPLICAN WITH 0
007442  070227  177777                  MUL     #-1,%2          ;MULTIPLY 0 * #-1
007446  013767  177776  005002          MOV     @#PS,PSW        ;SAVE PS
007454  122767  000004  004774          CMPB    #4,PSW          ;IS PS = 4
007462  001401                          BEQ     .+4
007464  000000                          HLT                     ;PS IS WRONG
007466  022702  000000                  CMP     #0,%2           ;IS HIGH ORDER = 0
007472  001401                          BEQ     .+4
007474  000000                          HLT                     ;HIGH ORDER IS WRONG
007476  022703  000000                  CMP     #0,%211         ;IS LOW ORDER = 0
007502  001401                          BEQ     .+4
007504  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 121   MUL   -1 * #1 = -1 -1   PS = 10
                                ;*****************************************************************

007506  010701                          SCOPE                   ;TEST OF MULTIPLY
007510  012703  177777                  MOV     #-1,%3          ;LOAD MULTIPLICAN WITH -1
007514  070327  000021                  MUL     #1,%3           ;MULTIPLY -1 * #1
007520  013767  177776  004730          MOV     @#PS,PSW        ;SAVE PS
007526  122767  000010  004722          CMPB    #10,PSW         ;IS PS = 10
007534  001401                          BEQ     .+4
007536  000000                          HLT                     ;PS IS WRONG
007540  022703  177777                  CMP     #-1,%3          ;IS HIGH ORDER = -1
007544  001401                          BEQ     .+4
007546  000000                          HLT                     ;HIGH ORDER IS WRONG
007550  022703  177777                  CMP     #-1,%3+1        ;IS LOW ORDER = -1
007554  001401                          BEQ     .+4
007556  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 122   MUL   -1 * #0 = 0 0   PS = 4
                                ;*****************************************************************

007560  010701                          SCOPE                   ;TEST OF MULTIPLY
007562  012703  177777                  MOV     #-1,%3          ;LOAD MULTIPLICAN WITH -1
007566  070327  000000                  MUL     #0,%3           ;MULTIPLY -1 * #0
007572  013767  177776  004656          MOV     @#PS,PSW        ;SAVE PS
007600  122767  000004  004650          CMPB    #4,PSW          ;IS PS = 4
007606  001401                          BEQ     .+4
007610  000000                          HLT                     ;PS IS WRONG
007612  022703  000000                  CMP     #0,%3           ;IS HIGH ORDER = 0
007616  001401                          BEQ     .+4
007620  000000                          HLT                     ;HIGH ORDER IS WRONG
007622  022703  000000                  CMP     #0,%3+1         ;IS LOW ORDER = 0
007626  001401                          BEQ     .+4
007630  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 123   MUL   77777 * #100000 = 100000 100000   PS = 11
                                ;*****************************************************************

007632  010701                          SCOPE                   ;TEST OF MULTIPLY
007634  012703  077777                  MOV     #77777,%3       ;LOAD MULTIPLICAN WITH 77777
007640  070327  100000                  MUL     #100000,%3      ;MULTIPLY 77777 * #100000
007644  013767  177776  004604          MOV     @#PS,PSW        ;SAVE PS
007652  122767  000011  004576          CMPB    #11,PSW         ;IS PS = 11
007660  001401                          BEQ     .+4
007662  000000                          HLT                     ;PS IS WRONG
007664  022703  100000                  CMP     #100000,%3      ;IS HIGH ORDER = 100000
007670  001401                          BEQ     .+4
007672  000000                          HLT                     ;HIGH ORDER IS WRONG
007674  022703  100000                  CMP     #100000,%3+1    ;IS LOW ORDER = 100000
007700  001401                          BEQ     .+4
007702  000000                          HLT                     ;LOW ORDER IS WRONG


                                ;*****************************************************************
                                ;TEST 124   MUL   -1 * #77777 = 100001 100001   PS = 10
                                ;*****************************************************************

007704  010701                          SCOPE                   ;TEST OF MULTIPLY
007706  012703  177777                  MOV     #-1,%3          ;LOAD MULTIPLICAN WITH -1
007712  070327  077777                  MUL     #77777,%3       ;MULTIPLY -1 * #77777
007716  013767  177776  004532          MOV     @#PS,PSW        ;SAVE PS
007724  122767  000010  004524          CMPB    #10,PSW         ;IS PS = 10
007732  001401                          BEQ     .+4
007734  000000                          HLT                     ;PS IS WRONG
007736  022703  100001                  CMP     #100001,%3      ;IS HIGH ORDER = 100001
007742  001401                          BEQ     .+4
007744  000000                          HLT                     ;HIGH ORDER IS WRONG
007746  022703  100001                  CMP     #100001,%3+1    ;IS LOW ORDER = 100001
007752  001401                          BEQ     .+4
007754  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 125   MUL   77777 * #77777 = 1 1   PS = 1
                                ;*****************************************************************

007756  010701                          SCOPE                   ;TEST OF MULTIPLY
007760  012703  077777                  MOV     #77777,%3       ;LOAD MULTIPLICAN WITH 77777
007764  070327  077777                  MUL     #77777,%3       ;MULTIPLY 77777 * #77777
007770  013767  177776  004460          MOV     @#PS,PSW        ;SAVE PS
007776  122767  000001  004452          CMPB    #1,PSW          ;IS PS = 1
010004  001401                          BEQ     .+4
010006  000000                          HLT                     ;PS IS WRONG
010010  022703  000001                  CMP     #1,%3           ;IS HIGH ORDER = 1
010014  001401                          BEQ     .+4
010016  000000                          HLT                     ;HIGH ORDER IS WRONG
010020  022703  000001                  CMP     #1,%3+1         ;IS LOW ORDER = 1
010024  001401                          BEQ     .+4
010026  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 126   MUL   2 * #2 = 4 4   PS = 0
                                ;*****************************************************************

010030  010701                          SCOPE                   ;TEST OF MULTIPLY
010032  012703  000002                  MOV     #2,%3           ;LOAD MULTIPLICAN WITH 2
010036  070327  000002                  MUL     #2,%3           ;MULTIPLY 2 * #2
010042  013767  177776  004406          MOV     @#PS,PSW        ;SAVE PS
010050  122767  000000  004400          CMPB    #0,PSW          ;IS PS = 0
010056  001401                          BEQ     .+4
010060  000000                          HLT                     ;PS IS WRONG
010062  022703  000004                  CMP     #4,%3           ;IS HIGH ORDER = 4
010066  001401                          BEQ     .+4
010070  000000                          HLT                     ;HIGH ORDER IS WRONG
010072  022703  000004                  CMP     #4,%3+1         ;IS LOW ORDER = 4
010076  001401                          BEQ     .+4
010100  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 127   MUL   0 * #0 = 0 0   PS = 4
                                        ;*****************************************************************

010102  010701                          SCOPE                   ;TEST OF MULTIPLY
010104  012704  000000                  MOV     #0,%4           ;LOAD MULTIPLICAN WITH 0
010110  070427  000000                  MUL     #0,%4           ;MULTIPLY 0 * #0
010114  013767  177776  004334          MOV     @#PS,PSW        ;SAVE PS
010122  122767  000004  004326          CMPB    #4,PSW          ;IS PS = 4
010130  001401                          BEQ     .+4
010132  000000                          HLT                     ;PS IS WRONG
010134  022704  000000                  CMP     #0,%4           ;IS HIGH ORDER = 0
010140  001401                          BEQ     .+4
010142  000000                          HLT                     ;HIGH ORDER IS WRONG
010144  022705  000000                  CMP     #0,%4!1         ;IS LOW ORDER = 0
010150  001401                          BEQ     .+4
010152  000000                          HLT                     ;LOW ORDER IS WRONG

                                        ;*****************************************************************
                                        ;TEST 130   MUL   0 * #1 = 0 0   PS = 4
                                        ;*****************************************************************

010154  010701                          SCOPE                   ;TEST OF MULTIPLY
010156  012704  000000                  MOV     #0,%4           ;LOAD MULTIPLICAN WITH 0
010162  070427  000001                  MUL     #1,%4           ;MULTIPLY 0 * #1
010166  013767  177776  004262          MOV     @#PS,PSW        ;SAVE PS
010174  122767  000004  004254          CMPB    #4,PSW          ;IS PS = 4
010202  001401                          BEQ     .+4
010204  000000                          HLT                     ;PS IS WRONG
010206  022704  000000                  CMP     #0,%4           ;IS HIGH ORDER = 0
010212  001401                          BEQ     .+4
010214  000000                          HLT                     ;HIGH ORDER IS WRONG
010216  022705  000000                  CMP     #0,%4!1         ;IS LOW ORDER = 0
010222  001401                          BEQ     .+4
010224  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 131   MUL   1 * #0 = 0 0   PS = 4
                                ;*****************************************************************

010226  010701                          SCOPE                   ;TEST OF MULTIPLY
010230  012704  000001                  MOV     #1,%4           ;LOAD MULTIPLICAN WITH 1
010234  070427  000000                  MUL     #0,%4           ;MULTIPLY 1 * #0
010240  013767  177776  004210          MOV     @#PS,PSW        ;SAVE PS
010246  122767  000004  004202          CMPB    #4,PSW          ;IS PS = 4
010254  001401                          BEQ     .+4
010256  000000                          HLT                     ;PS IS WRONG
010260  022704  000000                  CMP     #0,%4           ;IS HIGH ORDER = 0
010264  001401                          BEQ     .+4
010266  000000                          HLT                     ;HIGH ORDER IS WRONG
010270  022705  000000                  CMP     #0,%4!1         ;IS LOW ORDER = 0
010274  001401                          BEQ     .+4
010276  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 132   MUL   -1 * #1 = -1 -1   PS = 10
                                ;*****************************************************************

010300  010701                          SCOPE                   ;TEST OF MULTIPLY
010302  012704  177777                  MOV     #-1,%4          ;LOAD MULTIPLICAN WITH -1
010306  070427  000001                  MUL     #1,%4           ;MULTIPLY -1 * #1
010312  013767  177776  004136          MOV     @#PS,PSW        ;SAVE PS
010320  122767  000010  004130          CMPB    #10,PSW         ;IS PS = 10
010326  001401                          BEQ     .+4
010330  000000                          HLT                     ;PS IS WRONG
010332  022704  177777                  CMP     #-1,%4          ;IS HIGH ORDER = -1
010336  001401                          BEQ     .+4
010340  000000                          HLT                     ;HIGH ORDER IS WRONG
010342  022705  177777                  CMP     #-1,%4!1        ;IS LOW ORDER = -1
010346  001401                          BEQ     .+4
010350  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 133   MUL   1 * #-1 = -1 -1   PS = 10
                                        ;*****************************************************************

010352  010701                          SCOPE                   ;TEST OF MULTIPLY
010354  012704  000001                  MOV     #1,%4           ;LOAD MULTIPLICAN WITH 1
010360  070427  177777                  MUL     #-1,%4          ;MULTIPLY 1 * #-1
010364  013767  177776  004064          MOV     @#PS,PSW        ;SAVE PS
010372  122767  000010  004056          CMPB    #10,PSW         ;IS PS = 10
010400  001401                          BEQ     .+4
010402  000000                          HLT                     ;PS IS WRONG
010404  022704  177777                  CMP     #-1,%4          ;IS HIGH ORDER = -1
010410  001401                          BEQ     .+4
010412  000000                          HLT                     ;HIGH ORDER IS WRONG
010414  022705  177777                  CMP     #-1,%4!1        ;IS LOW ORDER = -1
010420  001401                          BEQ     .+4
010422  000000                          HLT                     ;LOW ORDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 134   MUL   1 * #2 = 0 2   PS = 0
                                        ;*****************************************************************

010424  010701                          SCOPE                   ;TEST OF MULTIPLY
010426  012704  000001                  MOV     #1,%4           ;LOAD MULTIPLICAN WITH 1
010432  070427  000002                  MUL     #2,%4           ;MULTIPLY 1 * #2
010436  013767  177776  004012          MOV     @#PS,PSW        ;SAVE PS
010444  122767  000000  004004          CMPB    #0,PSW          ;IS PS = 0
010452  001401                          BEQ     .+4
010454  000000                          HLT                     ;PS IS WRONG
010456  022704  000000                  CMP     #0,%4           ;IS HIGH ORDER = 0
010462  001401                          BEQ     .+4
010464  000000                          HLT                     ;HIGH ORDER IS WRONG
010466  022705  000002                  CMP     #2,%4!1         ;IS LOW ORDER = 2
010472  001401                          BEQ     .+4
010474  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 135   MUL   2 * #2 = 0 4   PS = 0
                                        ;*****************************************************************

010476  010701                          SCOPE                   ;TEST OF MULTIPLY
010500  012704  000002                  MOV     #2,%4           ;LOAD MULTIPLICAN WITH 2
010504  070427  000002                  MUL     #2,%4           ;MULTIPLY 2 * #2
010510  013767  177776  003740          MOV     @#PS,PSW        ;SAVE PS
010516  122767  000000  003732          CMPB    #0,PSW          ;IS PS = 0
010524  001401                          BEQ     .+4
010526  000000                          HLT                     ;PS IS WRONG
010530  022704  000000                  CMP     #0,%4           ;IS HIGH ORDER = 0
010534  001401                          BEQ     .+4
010536  000000                          HLT                     ;HIGH ORDER IS WRONG
010540  022705  000004                  CMP     #4,%4!1         ;IS LOW ORDER = 4
010544  001401                          BEQ     .+4
010546  000000                          HLT                     ;LOW ORDER IS WRONG

                                        ;*****************************************************************
                                        ;TEST 136   MUL   1000 * #200 = 1 0   PS = 1
                                        ;*****************************************************************

010550  010701                          SCOPE                   ;TEST OF MULTIPLY
010552  012704  001000                  MOV     #1000,%4        ;LOAD MULTIPLICAN WITH 1000
010556  070427  000200                  MUL     #200,%4         ;MULTIPLY 1000 * #200
010562  013767  177776  003666          MOV     @#PS,PSW        ;SAVE PS
010570  122767  000001  003660          CMPB    #1,PSW          ;IS PS = 1
010576  001401                          BEQ     .+4
010600  000000                          HLT                     ;PS IS WRONG
010602  022704  000001                  CMP     #1,%4           ;IS HIGH ORDER = 1
010606  001401                          BEQ     .+4
010610  000000                          HLT                     ;HIGH ORDER IS WRONG
010612  022705  000000                  CMP     #0,%4!1         ;IS LOW ORDER = 0
010616  001401                          BEQ     .+4
010620  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 137   MUL   200 * #1000 = 1 0   PS = 1
                                        ;*****************************************************************

010622  010701                          SCOPE                   ;TEST OF MULTIPLY
010624  012704  000200                  MOV     #200,%4         ;LOAD MULTIPLICAN WITH 200
010630  070427  001000                  MUL     #1000,%4        ;MULTIPLY 200 * #1000
010634  013767  177776  003614          MOV     @#PS,PSW        ;SAVE PS
010642  122767  000001  003606          CMPB    #1,PSW          ;IS PS = 1
010650  001401                          BEQ     .+4
010652  000000                          HLT                     ;PS IS WRONG
010654  022704  000001                  CMP     #1,%4           ;IS HIGH ORDER = 1
010660  001401                          BEQ     .+4
010662  000000                          HLT                     ;HIGH ORDER IS WRONG
010664  022705  000000                  CMP     #0,%411         ;IS LOW ORDER = 0
010670  001401                          BEQ     .+4
010672  000000                          HLT                     ;LOW ORDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 140   MUL   77777 * #2 = 0 177776   PS = 1
                                        ;*****************************************************************

010674  010701                          SCOPE                   ;TEST OF MULTIPLY
010676  012704  077777                  MOV     #77777,%4       ;LOAD MULTIPLICAN WITH 77777
010702  070427  000002                  MUL     #2,%4           ;MULTIPLY 77777 * #2
010706  013767  177776  003542          MOV     @#PS,PSW        ;SAVE PS
010714  122767  000001  003534          CMPB    #1,PSW          ;IS PS = 1
010722  001401                          BEQ     .+4
010724  000000                          HLT                     ;PS IS WRONG
010726  022704  000000                  CMP     #0,%4           ;IS HIGH ORDER = 0
010732  001401                          BEQ     .+4
010734  000000                          HLT                     ;HIGH ORDER IS WRONG
010736  022705  177776                  CMP     #177776,%411    ;IS LOW ORDER = 177776
010742  001401                          BEQ     .+4
010744  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 141   MUL   2 * #77777 = 0 177776   PS = 1
                                ;*****************************************************************

010746  010701                          SCOPE                   ;TEST OF MULTIPLY
010750  012704  000002                  MOV     #2,%4           ;LOAD MULTIPLICAN WITH 2
010754  070427  077777                  MUL     #77777,%4       ;MULTIPLY 2 * #77777
010760  013767  177776  003470          MOV     @#PS,PSW        ;SAVE PS
010766  122767  000001  003462          CMPB    #1,PSW          ;IS PS = 1
010774  001401                          BEQ     .+4
010776  000000                          HLT                     ;PS IS WRONG
011000  022704  000000                  CMP     #0,%4           ;IS HIGH ORDER = 0
011004  001401                          BEQ     .+4
011006  000000                          HLT                     ;HIGH ORDER IS WRONG
011010  022705  177776                  CMP     #177776,%4!1    ;IS LOW ORDER = 177776
011014  001401                          BEQ     .+4
011016  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 142   MUL   7777 * #10 = 0 77770   PS = 0
                                ;*****************************************************************

011020  010701                          SCOPE                   ;TEST OF MULTIPLY
011022  012704  007777                  MOV     #7777,%4        ;LOAD MULTIPLICAN WITH 7777
011026  070427  000010                  MUL     #10,%4          ;MULTIPLY 7777 * #10
011032  013767  177776  003416          MOV     @#PS,PSW        ;SAVE PS
011040  122767  000000  003410          CMPB    #0,PSW          ;IS PS = 0
011046  001401                          BEQ     .+4
011050  000000                          HLT                     ;PS IS WRONG
011052  022704  000000                  CMP     #0,%4           ;IS HIGH ORDER = 0
011056  001401                          BEQ     .+4
011060  000000                          HLT                     ;HIGH ORDER IS WRONG
011062  022705  077770                  CMP     #77770,%4!1     ;IS LOW ORDER = 77770
011066  001401                          BEQ     .+4
011070  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 143   MUL   10 * #7777 = 0 77770   PS = 0
                                        ;*****************************************************************

011072  010701                          SCOPE                   ;TEST OF MULTIPLY
011074  012704  000010                  MOV     #10,%4          ;LOAD MULTIPLICAN WITH 10
011100  070427  007777                  MUL     #7777,%4        ;MULTIPLY 10 * #7777
011104  013767  177776  003344          MOV     @#PS,PSW        ;SAVE PS
011112  122767  000000  003336          CMPB    #0,PSW          ;IS PS = 0
011120  001401                          BEQ     .+4
011122  000000                          HLT                     ;PS IS WRONG
011124  022704  000000                  CMP     #0,%4           ;IS HIGH ORDER = 0
011130  001401                          BEQ     .+4
011132  000000                          HLT                     ;HIGH ORDER IS WRONG
011134  022705  077770                  CMP     #77770,%4!1     ;IS LOW ORDER = 77770
011140  001401                          BEQ     .+4
011142  000000                          HLT                     ;LOW ORDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 144   MUL   77777 * #77777 = 37777 1   PS = 1
                                        ;*****************************************************************

011144  010701                          SCOPE                   ;TEST OF MULTIPLY
011146  012704  077777                  MOV     #77777,%4       ;LOAD MULTIPLICAN WITH 77777
011152  070427  077777                  MUL     #77777,%4       ;MULTIPLY 77777 * #77777
011156  013767  177776  003272          MOV     @#PS,PSW        ;SAVE PS
011164  122767  000001  003264          CMPB    #1,PSW          ;IS PS = 1
011172  001401                          BEQ     .+4
011174  000000                          HLT                     ;PS IS WRONG
011176  022704  037777                  CMP     #37777,%4       ;IS HIGH ORDER = 37777
011202  001401                          BEQ     .+4
011204  000000                          HLT                     ;HIGH ORDER IS WRONG
011206  022705  000001                  CMP     #1,%4!1         ;IS LOW ORDER = 1
011212  001401                          BEQ     .+4
011214  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 145   MUL   77777 * #1 = 0 77777   PS = 0
                                ;*****************************************************************

011216  010701                          SCOPE                   ;TEST OF MULTIPLY
011220  012704  077777                  MOV     #77777,%4       ;LOAD MULTIPLICAN WITH 77777
011224  070427  000001                  MUL     #1,%4           ;MULTIPLY 77777 * #1
011230  013767  177776  003220          MOV     @#PS,PSW        ;SAVE PS
011236  122767  000000  003212          CMPB    #0,PSW          ;IS PS = 0
011244  001401                          BEQ     .+4
011246  000000                          HLT                     ;PS IS WRONG
011250  022704  000000                  CMP     #0,%4           ;IS HIGH ORDER = 0
011254  001401                          BEQ     .+4
011256  000000                          HLT                     ;HIGH ORDER IS WRONG
011260  022705  077777                  CMP     #77777,%4!1     ;IS LOW ORDER = 77777
011264  001401                          BEQ     .+4
011266  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 146   MUL   1 * #77777 = 0 77777   PS = 0
                                ;*****************************************************************

011270  010701                          SCOPE                   ;TEST OF MULTIPLY
011272  012704  000001                  MOV     #1,%4           ;LOAD MULTIPLICAN WITH 1
011276  070427  077777                  MUL     #77777,%4       ;MULTIPLY 1 * #77777
011302  013767  177776  003146          MOV     @#PS,PSW        ;SAVE PS
011310  122767  000000  003140          CMPB    #0,PSW          ;IS PS = 0
011316  001401                          BEQ     .+4
011320  000000                          HLT                     ;PS IS WRONG
011322  022704  000000                  CMP     #0,%4           ;IS HIGH ORDER = 0
011326  001401                          BEQ     .+4
011330  000000                          HLT                     ;HIGH ORDER IS WRONG
011332  022705  077777                  CMP     #77777,%4!1     ;IS LOW ORDER = 77777
011336  001401                          BEQ     .+4
011340  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 147   MUL   77777 * #-1 = -1 100001   PS = 10
                                ;*****************************************************************

011342  010701                          SCOPE                   ;TEST OF MULTIPLY
011344  012704  077777                  MOV     #77777,%4       ;LOAD MULTIPLICAN WITH 77777
011350  070427  177777                  MUL     #-1,%4          ;MULTIPLY 77777 * #-1
011354  013767  177776  003074          MOV     @#PS,PSW        ;SAVE PS
011362  122767  000010  003066          CMPB    #10,PSW         ;IS PS = 10
011370  001401                          BEQ     .+4
011372  000000                          HLT                     ;PS IS WRONG
011374  022704  177777                  CMP     #-1,%4          ;IS HIGH ORDER = -1
011400  001401                          BEQ     .+4
011402  000000                          HLT                     ;HIGH ORDER IS WRONG
011404  022705  100001                  CMP     #100001,%411    ;IS LOW ORDER = 100001
011410  001401                          BEQ     .+4
011412  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 150   MUL   -1 * #77777 = -1 100001   PS = 10
                                ;*****************************************************************

011414  010701                          SCOPE                   ;TEST OF MULTIPLY
011416  012704  177777                  MOV     #-1,%4          ;LOAD MULTIPLICAN WITH -1
011422  070427  077777                  MUL     #77777,%4       ;MULTIPLY -1 * #77777
011426  013767  177776  003022          MOV     @#PS,PSW        ;SAVE PS
011434  122767  000010  003014          CMPB    #10,PSW         ;IS PS = 10
011442  001401                          BEQ     .+4
011444  000000                          HLT                     ;PS IS WRONG
011446  022704  177777                  CMP     #-1,%4          ;IS HIGH ORDER = -1
011452  001401                          BEQ     .+4
011454  000000                          HLT                     ;HIGH ORDER IS WRONG
011456  022705  100001                  CMP     #100001,%411    ;IS LOW ORDER = 100001
011462  001401                          BEQ     .+4
011464  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 151   MUL   -2 * #77777 = -1 2   PS = 11
                                ;*****************************************************************

011466  010701                          SCOPE                   ;TEST OF MULTIPLY
011470  012704  177776                  MOV     #-2,%4          ;LOAD MULTIPLICAN WITH -2
011474  070427  077777                  MUL     #77777,%4       ;MULTIPLY -2 * #77777
011500  013767  177776  002750          MOV     @#PS,PSW        ;SAVE PS
011506  122767  000011  002742          CMPB    #11,PSW         ;IS PS = 11
011514  001401                          BEQ     .+4
011516  000000                          HLT                     ;PS IS WRONG
011520  022704  177777                  CMP     #-1,%4          ;IS HIGH ORDER = -1
011524  001401                          BEQ     .+4
011526  000000                          HLT                     ;HIGH ORDER IS WRONG
011530  022705  000002                  CMP     #2,%4!1         ;IS LOW ORDER = 2
011534  001401                          BEQ     .+4
011536  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 152   MUL   77777 * #-2 = -1 2   PS = 11
                                ;*****************************************************************

011540  010701                          SCOPE                   ;TEST OF MULTIPLY
011542  012704  077777                  MOV     #77777,%4       ;LOAD MULTIPLICAN WITH 77777
011546  070427  177776                  MUL     #-2,%4          ;MULTIPLY 77777 * #-2
011552  013767  177776  002676          MOV     @#PS,PSW        ;SAVE PS
011560  122767  000011  002670          CMPB    #11,PSW         ;IS PS = 11
011566  001401                          BEQ     .+4
011570  000000                          HLT                     ;PS IS WRONG
011572  022704  177777                  CMP     #-1,%4          ;IS HIGH ORDER = -1
011576  001401                          BEQ     .+4
011600  000000                          HLT                     ;HIGH ORDER IS WRONG
011602  022705  000002                  CMP     #2,%4!1         ;IS LOW ORDER = 2
011606  001401                          BEQ     .+4
011610  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 153   MUL   125252 * #2 = -1 52524   PS = 11
                                ;*****************************************************************

011612  010701                          SCOPE                   ;TEST OF MULTIPLY
011614  012704  125252                  MOV     #125252,%4      ;LOAD MULTIPLICAN WITH 125252
011620  070427  000002                  MUL     #2,%4           ;MULTIPLY 125252 * #2
011624  013767  177776  002624          MOV     @#PS,PSW        ;SAVE PS
011632  122767  000011  002616          CMPB    #11,PSW         ;IS PS = 11
011640  001401                          BEQ     .+4
011642  000000                          HLT                     ;PS IS WRONG
011644  022704  177777                  CMP     #-1,%4          ;IS HIGH ORDER = -1
011650  001401                          BEQ     .+4
011652  000000                          HLT                     ;HIGH ORDER IS WRONG
011654  022705  052524                  CMP     #52524,%411     ;IS LOW ORDER = 52524
011660  001401                          BEQ     .+4
011662  000000                          HLT                     ;LOW ORDER IS WRONG


                                ;*****************************************************************
                                ;TEST 154   MUL   2 * #125252 = -1 52524   PS = 11
                                ;*****************************************************************

011664  010701                          SCOPE                   ;TEST OF MULTIPLY
011666  012704  000002                  MOV     #2,%4           ;LOAD MULTIPLICAN WITH 2
011672  070427  125252                  MUL     #125252,%4      ;MULTIPLY 2 * #125252
011676  013767  177776  002552          MOV     @#PS,PSW        ;SAVE PS
011704  122767  000011  002544          CMPB    #11,PSW         ;IS PS = 11
011712  001401                          BEQ     .+4
011714  000000                          HLT                     ;PS IS WRONG
011716  022704  177777                  CMP     #-1,%4          ;IS HIGH ORDER = -1
011722  001401                          BEQ     .+4
011724  000000                          HLT                     ;HIGH ORDER IS WRONG
011726  022705  052524                  CMP     #52524,%411     ;IS LOW ORDER = 52524
011732  001401                          BEQ     .+4
011734  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 155   MUL   52525 * #2 = 0 125252   PS = 1
                                        ;*****************************************************************

011736  010701                          SCOPE                   ;TEST OF MULTIPLY
011740  012704  052525                  MOV     #52525,%4       ;LOAD MULTIPLICAN WITH 52525
011744  070427  000002                  MUL     #2,%4           ;MULTIPLY 52525 * #2
011750  013767  177776  002500          MOV     @#PS,PSW        ;SAVE PS
011756  122767  000001  002472          CMPB    #1,PSW          ;IS PS = 1
011764  001401                          BEQ     .+4
011766  000000                          HLT                     ;PS IS WRONG
011770  022704  000000                  CMP     #0,%4           ;IS HIGH ORDER = 0
011774  001401                          BEQ     .+4
011776  000000                          HLT                     ;HIGH ORDER IS WRONG
012000  022705  125252                  CMP     #125252,%4!1    ;IS LOW ORDER = 125252
012004  001401                          BEQ     .+4
012006  000000                          HLT                     ;LOW ORDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 156   MUL   2 * #52525 = 0 125252   PS = 1
                                        ;*****************************************************************

012010  010701                          SCOPE                   ;TEST OF MULTIPLY
012012  012704  000002                  MOV     #2,%4           ;LOAD MULTIPLICAN WITH 2
012016  070427  052525                  MUL     #52525,%4       ;MULTIPLY 2 * #52525
012022  013767  177776  002426          MOV     @#PS,PSW        ;SAVE PS
012030  122767  000001  002420          CMPB    #1,PSW          ;IS PS = 1
012036  001401                          BEQ     .+4
012040  000000                          HLT                     ;PS IS WRONG
012042  022704  000000                  CMP     #0,%4           ;IS HIGH ORDER = 0
012046  001401                          BEQ     .+4
012050  000000                          HLT                     ;HIGH ORDER IS WRONG
012052  022705  125252                  CMP     #125252,%4!1    ;IS LOW ORDER = 125252
012056  001401                          BEQ     .+4
012060  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 157   MUL   125252 * #40000 = 165252 100000   PS = 11
                                ;*****************************************************************

012062  010701                          SCOPE                   ;TEST OF MULTIPLY
012064  012704  125252                  MOV     #125252,%4      ;LOAD MULTIPLICAN WITH 125252
012070  070427  040000                  MUL     #40000,%4       ;MULTIPLY 125252 * #40000
012074  013767  177776  002354          MOV     @#PS,PSW        ;SAVE PS
012102  122767  000011  002346          CMPB    #11,PSW         ;IS PS = 11
012110  001401                          BEQ     .+4
012112  000000                          HLT                     ;PS IS WRONG
012114  022704  165252                  CMP     #165252,%4      ;IS HIGH ORDER = 165252
012120  001401                          BEQ     .+4
012122  000000                          HLT                     ;HIGH ORDER IS WRONG
012124  022705  100000                  CMP     #100000,%4!1    ;IS LOW ORDER = 100000
012130  001401                          BEQ     .+4
012132  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 160   MUL   40000 * #125252 = 165252 100000   PS = 11
                                ;*****************************************************************

012134  010701                          SCOPE                   ;TEST OF MULTIPLY
012136  012704  040000                  MOV     #40000,%4       ;LOAD MULTIPLICAN WITH 40000
012142  070427  125252                  MUL     #125252,%4      ;MULTIPLY 40000 * #125252
012146  013767  177776  002302          MOV     @#PS,PSW        ;SAVE PS
012154  122767  000011  002274          CMPB    #11,PSW         ;IS PS = 11
012162  001401                          BEQ     .+4
012164  000000                          HLT                     ;PS IS WRONG
012166  022704  165252                  CMP     #165252,%4      ;IS HIGH ORDER = 165252
012172  001401                          BEQ     .+4
012174  000000                          HLT                     ;HIGH ORDER IS WRONG
012176  022705  100000                  CMP     #100000,%4!1    ;IS LOW ORDER = 100000
012202  001401                          BEQ     .+4
012204  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 161   MUL   100000 * #100000 = 40000 0   PS = 1
                                        ;*****************************************************************

012206  010701                          SCOPE                   ;TEST OF MULTIPLY
012210  012704  100000                  MOV     #100000,%4      ;LOAD MULTIPLICAN WITH 100000
012214  070427  100000                  MUL     #100000,%4      ;MULTIPLY 100000 * #100000
012220  013767  177776  002230          MOV     @#PS,PSW        ;SAVE PS
012226  122767  000001  002222          CMPB    #1,PSW          ;IS PS = 1
012234  001401                          BEQ     .+4
012236  000000                          HLT                     ;PS IS WRONG
012240  022704  040000                  CMP     #40000,%4       ;IS HIGH ORDER = 40000
012244  001401                          BEQ     .+4
012246  000000                          HLT                     ;HIGH ORDER IS WRONG
012250  022705  000000                  CMP     #0,%4!1         ;IS LOW ORDER = 0
012254  001401                          BEQ     .+4
012256  000000                          HLT                     ;LOW ORDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 162   MUL   70707 * #70707 = 31221 44261   PS = 1
                                        ;*****************************************************************

012260  010701                          SCOPE                   ;TEST OF MULTIPLY
012262  012704  070707                  MOV     #70707,%4       ;LOAD MULTIPLICAN WITH 70707
012266  070427  070707                  MUL     #70707,%4       ;MULTIPLY 70707 * #70707
012272  013767  177776  002156          MOV     @#PS,PSW        ;SAVE PS
012300  122767  000001  002150          CMPB    #1,PSW          ;IS PS = 1
012306  001401                          BEQ     .+4
012310  000000                          HLT                     ;PS IS WRONG
012312  022704  031221                  CMP     #31221,%4       ;IS HIGH ORDER = 31221
012316  001401                          BEQ     .+4
012320  000000                          HLT                     ;HIGH ORDER IS WRONG
012322  022705  044261                  CMP     #44261,%4!1     ;IS LOW ORDER = 44261
012326  001401                          BEQ     .+4
012330  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 163   MUL   107070 * #107070 = 31222 26100   PS = 1
                                ;*****************************************************************

012332  010701                          SCOPE                   ;TEST OF MULTIPLY
012334  012704  107070                  MOV     #107070,%4      ;LOAD MULTIPLICAN WITH 107070
012340  070427  107070                  MUL     #107070,%4      ;MULTIPLY 107070 * #107070
012344  013767  177776  002104          MOV     @#PS,PSW        ;SAVE PS
012352  122767  000001  002076          CMPB    #1,PSW          ;IS PS = 1
012360  001401                          BEQ     .+4
012362  000000                          HLT                     ;PS IS WRONG
012364  022704  031222                  CMP     #31222,%4       ;IS HIGH ORDER = 31222
012370  001401                          BEQ     .+4
012372  000000                          HLT                     ;HIGH ORDER IS WRONG
012374  022705  026100                  CMP     #26100,%4!1     ;IS LOW ORDER = 26100
012400  001401                          BEQ     .+4
012402  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 164   MUL   100000 * #77777 = 140000 100000   PS = 11
                                ;*****************************************************************

012404  010701                          SCOPE                   ;TEST OF MULTIPLY
012406  012704  100000                  MOV     #100000,%4      ;LOAD MULTIPLICAN WITH 100000
012412  070427  077777                  MUL     #77777,%4       ;MULTIPLY 100000 * #77777
012416  013767  177776  002032          MOV     @#PS,PSW        ;SAVE PS
012424  122767  000011  002024          CMPB    #11,PSW         ;IS PS = 11
012432  001401                          BEQ     .+4
012434  000000                          HLT                     ;PS IS WRONG
012436  022704  140000                  CMP     #140000,%4      ;IS HIGH ORDER = 140000
012442  001401                          BEQ     .+4
012444  000000                          HLT                     ;HIGH ORDER IS WRONG
012446  022705  100000                  CMP     #100000,%4!1    ;IS LOW ORDER = 100000
012452  001401                          BEQ     .+4
012454  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 165   MUL   77777 * #100000 = 140000 100000   PS = 11
                                        ;*****************************************************************

012456  010701                          SCOPE                   ;TEST OF MULTIPLY
012460  012704  077777                  MOV     #77777,%4       ;LOAD MULTIPLICAN WITH 77777
012464  070427  100000                  MUL     #100000,%4      ;MULTIPLY 77777 * #100000
012470  013767  177776  001760          MOV     @#PS,PSW        ;SAVE PS
012476  122767  000011  001752          CMPB    #11,PSW         ;IS PS = 11
012504  001401                          BEQ     .+4
012506  000000                          HLT                     ;PS IS WRONG
012510  022704  140000                  CMP     #140000,%4      ;IS HIGH ORDER = 140000
012514  001401                          BEQ     .+4
012516  000000                          HLT                     ;HIGH ORDER IS WRONG
012520  022705  100000                  CMP     #100000,%4+1    ;IS LOW ORDER = 100000
012524  001401                          BEQ     .+4
012526  000000                          HLT                     ;LOW ORDER IS WRONG

                                        ;*****************************************************************
                                        ;TEST 166   MUL   157634 * #104031 = 7453 133074   PS = 1
                                        ;*****************************************************************

012530  010701                          SCOPE                   ;TEST OF MULTIPLY
012532  012704  157634                  MOV     #157634,%4      ;LOAD MULTIPLICAN WITH 157634
012536  070427  104031                  MUL     #104031,%4      ;MULTIPLY 157634 * #104031
012542  013767  177776  001706          MOV     @#PS,PSW        ;SAVE PS
012550  122767  000001  001700          CMPB    #1,PSW          ;IS PS = 1
012556  001401                          BEQ     .+4
012560  000000                          HLT                     ;PS IS WRONG
012562  022704  007453                  CMP     #7453,%4        ;IS HIGH ORDER = 7453
012566  001401                          BEQ     .+4
012570  000000                          HLT                     ;HIGH ORDER IS WRONG
012572  022705  133074                  CMP     #133074,%4+1    ;IS LOW ORDER = 133074
012576  001401                          BEQ     .+4
012600  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 167   MUL   104031 * #157634 = 7453 133074   PS = 1
                                ;*****************************************************************

012602  010701                          SCOPE                   ;TEST OF MULTIPLY
012604  012704  104031                  MOV     #104031,%4      ;LOAD MULTIPLICAN WITH 104031
012610  070427  157634                  MUL     #157634,%4      ;MULTIPLY 104031 * #157634
012614  013767  177776  001634          MOV     @#PS,PSW        ;SAVE PS
012622  122767  000001  001626          CMPB    #1,PSW          ;IS PS = 1
012630  001401                          BEQ     .+4
012632  000000                          HLT                     ;PS IS WRONG
012634  022704  007433                  CMP     #7453,%4        ;IS HIGH ORDER = 7453
012640  001401                          BEQ     .+4
012642  000000                          HLT                     ;HIGH ORDER IS WRONG
012644  022705  133074                  CMP     #133074,%411    ;IS LOW ORDER = 133074
012650  001401                          BEQ     .+4
012652  000000                          HLT                     ;LOW ORDER IS WRONG


                                ;*****************************************************************
                                ;TEST 170   MUL   152210 * #0 = 0 0   PS = 4
                                ;*****************************************************************

012654  010701                          SCOPE                   ;TEST OF MULTIPLY
012656  012704  152210                  MOV     #152210,%4      ;LOAD MULTIPLICAN WITH 152210
012662  070427  000000                  MUL     #0,%4           ;MULTIPLY 152210 * #0
012666  013767  177776  001562          MOV     @#PS,PSW        ;SAVE PS
012674  122767  000004  001554          CMPB    #4,PSW          ;IS PS = 4
012702  001401                          BEQ     .+4
012704  000000                          HLT                     ;PS IS WRONG
012706  022704  000000                  CMP     #0,%4           ;IS HIGH ORDER = 0
012712  001401                          BEQ     .+4
012714  000000                          HLT                     ;HIGH ORDER IS WRONG
012716  022705  000000                  CMP     #0,%411         ;IS LOW ORDER = 0
012722  001401                          BEQ     .+4
012724  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 171   MUL   0 * #152210 = 0 0   PS = 4
                                ;*****************************************************************

012726  010701                          SCOPE                   ;TEST OF MULTIPLY
012730  012704  000000                  MOV     #0,%4           ;LOAD MULTIPLICAN WITH 0
012734  070427  152210                  MUL     #152210,%4      ;MULTIPLY 0 * #152210
012740  013767  177776  001510          MOV     @#PS,PSW        ;SAVE PS
012746  122767  000004  001502          CMPB    #4,PSW          ;IS PS = 4
012754  001401                          BEQ     .+4
012756  000000                          HLT                     ;PS IS WRONG
012760  022704  000000                  CMP     #0,%4           ;IS HIGH ORDER = 0
012764  001401                          BEQ     .+4
012766  000000                          HLT                     ;HIGH ORDER IS WRONG
012770  022705  000000                  CMP     #0,%4+1         ;IS LOW ORDER = 0
012774  001401                          BEQ     .+4
012776  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 172   MUL   -1 * #0 = 0 0   PS = 4
                                ;*****************************************************************

013000  010701                          SCOPE                   ;TEST OF MULTIPLY
013002  012704  177777                  MOV     #-1,%4          ;LOAD MULTIPLICAN WITH -1
013006  070427  000000                  MUL     #0,%4           ;MULTIPLY -1 * #0
013012  013767  177776  001436          MOV     @#PS,PSW        ;SAVE PS
013020  122767  000004  001430          CMPB    #4,PSW          ;IS PS = 4
013026  001401                          BEQ     .+4
013030  000000                          HLT                     ;PS IS WRONG
013032  022704  000000                  CMP     #0,%4           ;IS HIGH ORDER = 0
013036  001401                          BEQ     .+4
013040  000000                          HLT                     ;HIGH ORDER IS WRONG
013042  022705  000000                  CMP     #0,%4+1         ;IS LOW ORDER = 0
013046  001401                          BEQ     .+4
013050  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 173   MUL   0 * #-1 = 0 0   PS = 4
                                ;*****************************************************************

013052  010701                          SCOPE                   ;TEST OF MULTIPLY
013054  012704  000000                  MOV     #0,%4           ;LOAD MULTIPLICAN WITH 0
013060  070427  177777                  MUL     #-1,%4          ;MULTIPLY 0 * #-1
013064  013767  177776  001364          MOV     @#PS,PSW        ;SAVE PS
013072  122767  000004  001356          CMPB    #4,PSW          ;IS PS = 4
013100  001401                          BEQ     .+4
013102  000000                          HLT                     ;PS IS WRONG
013104  022704  000000                  CMP     #0,%4           ;IS HIGH ORDER = 0
013110  001401                          BEQ     .+4
013112  000000                          HLT                     ;HIGH ORDER IS WRONG
013114  022705  000000                  CMP     #0,%4+1         ;IS LOW ORDER = 0
013120  001401                          BEQ     .+4
013122  000000                          HLT                     ;LOW ORDER IS WRONG


                                ;*****************************************************************
                                ;TEST 174   MUL   -1 * #1 = -1 -1   PS = 10
                                ;*****************************************************************

013124  010701                          SCOPE                   ;TEST OF MULTIPLY
013126  012705  177777                  MOV     #-1,%5          ;LOAD MULTIPLICAN WITH -1
013132  070527  000001                  MUL     #1,%5           ;MULTIPLY -1 * #1
013136  013767  177776  001312          MOV     @#PS,PSW        ;SAVE PS
013144  122767  000010  001304          CMPB    #10,PSW         ;IS PS = 10
013152  001401                          BEQ     .+4
013154  000000                          HLT                     ;PS IS WRONG
013156  022705  177777                  CMP     #-1,%5          ;IS HIGH ORDER = -1
013162  001401                          BEQ     .+4
013164  000000                          HLT                     ;HIGH ORDER IS WRONG
013166  022705  177777                  CMP     #-1,%5+1        ;IS LOW ORDER = -1
013172  001401                          BEQ     .+4
013174  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 175   MUL   -1 * #0 = 0 0   PS = 4
                                ;*****************************************************************

013176  010701                        SCOPE                   ;TEST OF MULTIPLY
013200  012705  177777                MOV     #-1,%5          ;LOAD MULTIPLICAN WITH -1
013204  070527  000000                MUL     #0,%5           ;MULTIPLY -1 * #0
013210  013767  177776  001240        MOV     @#PS,PSW        ;SAVE PS
013216  122767  000004  001232        CMPB    #4,PSW          ;IS PS = 4
013224  001401                        BEQ     .+4
013226  000000                        HLT                     ;PS IS WRONG
013230  022705  000000                CMP     #0,%5           ;IS HIGH ORDER = 0
013234  001401                        BEQ     .+4
013236  000000                        HLT                     ;HIGH ORDER IS WRONG
013240  022705  000000                CMP     #0,%5+1         ;IS LOW ORDER = 0
013244  001401                        BEQ     .+4
013246  000000                        HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 176   MUL   77777 * #100000 = 100000 100000   PS = 11
                                ;*****************************************************************

013250  010701                        SCOPE                   ;TEST OF MULTIPLY
013252  012705  077777                MOV     #77777,%5       ;LOAD MULTIPLICAN WITH 77777
013256  070527  100000                MUL     #100000,%5      ;MULTIPLY 77777 * #100000
013262  013767  177776  001166        MOV     @#PS,PSW        ;SAVE PS
013270  122767  000011  001160        CMPB    #11,PSW         ;IS PS = 11
013276  001401                        BEQ     .+4
013300  000000                        HLT                     ;PS IS WRONG
013302  022705  100000                CMP     #100000,%5      ;IS HIGH ORDER = 100000
013306  001401                        BEQ     .+4
013310  000000                        HLT                     ;HIGH ORDER IS WRONG
013312  022705  100000                CMP     #100000,%5+1    ;IS LOW ORDER = 100000
013316  001401                        BEQ     .+4
013320  000000                        HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 177   MUL   -1 * #77777 = 100001 100001   PS = 10
                                ;*****************************************************************

013322  010701                          SCOPE                   ;TEST OF MULTIPLY
013324  012705  177777                  MOV     #-1,%5          ;LOAD MULTIPLICAN WITH -1
013330  070527  077777                  MUL     #77777,%5       ;MULTIPLY -1 * #77777
013334  013767  177776  001114          MOV     @#PS,PSW        ;SAVE PS
013342  122767  000010  001106          CMPB    #10,PSW         ;IS PS = 10
013350  001401                          BEQ     .+4
013352  000000                          HLT                     ;PS IS WRONG
013354  022705  100001                  CMP     #100001,%5      ;IS HIGH ORDER = 100001
013360  001401                          BEQ     .+4
013362  000000                          HLT                     ;HIGH ORDER IS WRONG
013364  022705  100001                  CMP     #100001,%5+1    ;IS LOW ORDER = 100001
013370  001401                          BEQ     .+4
013372  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 200   MUL   77777 * #77777 = 1 1   PS = 1
                                ;*****************************************************************

013374  010701                          SCOPE                   ;TEST OF MULTIPLY
013376  012705  077777                  MOV     #77777,%5       ;LOAD MULTIPLICAN WITH 77777
013402  070527  077777                  MUL     #77777,%5       ;MULTIPLY 77777 * #77777
013406  013767  177776  001042          MOV     @#PS,PSW        ;SAVE PS
013414  122767  000001  001034          CMPB    #1,PSW          ;IS PS = 1
013422  001401                          BEQ     .+4
013424  000000                          HLT                     ;PS IS WRONG
013426  022705  000001                  CMP     #1,%5           ;IS HIGH ORDER = 1
013432  001401                          BEQ     .+4
013434  000000                          HLT                     ;HIGH ORDER IS WRONG
013436  022705  000001                  CMP     #1,%5+1         ;IS LOW ORDER = 1
013442  001401                          BEQ     .+4
013444  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 201   MUL   2 * #2 = 4 4   PS = 0
                                        ;*****************************************************************

013446  010701                          SCOPE                   ;TEST OF MULTIPLY
013450  012705  000002                  MOV     #2,%5           ;LOAD MULTIPLICAN WITH 2
013454  070527  000002                  MUL     #2,%5           ;MULTIPLY 2 * #2
013460  013767  177776  000770          MOV     @#PS,PSW        ;SAVE PS
013466  122767  000000  000762          CMPB    #0,PSW          ;IS PS = 0
013474  001401                          BEQ     .+4
013476  000000                          HLT                     ;PS IS WRONG
013500  022705  000004                  CMP     #4,%5           ;IS HIGH ORDER = 4
013504  001401                          BEQ     .+4
013506  000000                          HLT                     ;HIGH ORDER IS WRONG
013510  022705  000004                  CMP     #4,%5!1         ;IS LOW ORDER = 4
013514  001401                          BEQ     .+4
013516  000000                          HLT                     ;LOW ORDER IS WRONG


013520  012702  040000                  MOV     #40000,%2
013524  012703  014462                  MOV     #S1,%3
013530  012704  014464                  MOV     #S2,%4

                                        ;*****************************************************************
                                        ;TEST 202   MUL   125252 * S1 = 165252 100000   PS = 11
                                        ;*****************************************************************

013534  010701                          SCOPE                   ;TEST OF MULTIPLY
013536  012700  125252                  MOV     #125252,%0      ;LOAD MULTIPLICAN WITH 125252
013542  070067  000714                  MUL     S1,%0           ;MULTIPLY 125252 * S1
013546  013767  177776  000702          MOV     @#PS,PSW        ;SAVE PS
013554  122767  000011  000674          CMPB    #11,PSW         ;IS PS = 11
013562  001401                          BEQ     .+4
013564  000000                          HLT                     ;PS IS WRONG
013566  022700  165252                  CMP     #165252,%0      ;IS HIGH ORDER = 165252
013572  001401                          BEQ     .+4
013574  000000                          HLT                     ;HIGH ORDER IS WRONG
013576  022701  100000                  CMP     #100000,%0!1    ;IS LOW ORDER = 100000
013602  001401                          BEQ     .+4
013604  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 203   MUL   125252 * @S2 = 165252 100000   PS = 11
                                ;*****************************************************************

013606  010701                          SCOPE                   ;TEST OF MULTIPLY
013610  012700  125252                  MOV     #125252,%0      ;LOAD MULTIPLICAN WITH 125252
013614  070077  000644                  MUL     @S2,%0          ;MULTIPLY 125252 * @S2
013620  013767  177776  000630          MOV     @#PS,PSW        ;SAVE PS
013626  122767  000011  000622          CMPB    #11,PSW         ;IS PS = 11
013634  001401                          BEQ     .+4
013636  000000                          HLT                     ;PS IS WRONG
013640  022700  165252                  CMP     #165252,%0      ;IS HIGH ORDER = 165252
013644  001401                          BEQ     .+4
013646  000000                          HLT                     ;HIGH ORDER IS WRONG
013650  022701  100000                  CMP     #100000,%0!1    ;IS LOW ORDER = 100000
013654  001401                          BEQ     .+4
013656  000000                          HLT                     ;LOW ORDER IS WRONG

                                ;*****************************************************************
                                ;TEST 204   MUL   125252 * @#S1 = 165252 100000   PS = 11
                                ;*****************************************************************

013660  010701                          SCOPE                   ;TEST OF MULTIPLY
013662  012700  125252                  MOV     #125252,%0      ;LOAD MULTIPLICAN WITH 125252
013666  070037  014462                  MUL     @#S1,%0         ;MULTIPLY 125252 * @#S1
013672  013767  177776  000556          MOV     @#PS,PSW        ;SAVE PS
013700  122767  000011  000550          CMPB    #11,PSW         ;IS PS = 11
013706  001401                          BEQ     .+4
013710  000000                          HLT                     ;PS IS WRONG
013712  022700  165252                  CMP     #165252,%0      ;IS HIGH ORDER = 165252
013716  001401                          BEQ     .+4
013720  000000                          HLT                     ;HIGH ORDER IS WRONG
013722  022701  100000                  CMP     #100000,%0!1    ;IS LOW ORDER = 100000
013726  001401                          BEQ     .+4
013730  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 205   MUL   125252 * %2 = 165252 100000   PS = 11
                                        ;*****************************************************************

013732  010701                          SCOPE                   ;TEST OF MULTIPLY
013734  012700  125252                  MOV     #125252,%0      ;LOAD MULTIPLICAN WITH 125252
013740  070002                          MUL     %2,%0           ;MULTIPLY 125252 * %2
013742  013767  177776  000506          MOV     @#PS,PSW        ;SAVE PS
013750  122767  000011  000500          CMPB    #11,PSW         ;IS PS = 11
013756  001401                          BEQ     .+4
013760  000000                          HLT                     ;PS IS WRONG
013762  022700  165252                  CMP     #165252,%0      ;IS HIGH ORDER = 165252
013766  001401                          BEQ     .+4
013770  000000                          HLT                     ;HIGH ORDER IS WRONG
013772  022701  100000                  CMP     #100000,%0!1    ;IS LOW ORDER = 100000
013776  001401                          BEQ     .+4
014000  000000                          HLT                     ;LOW ORDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 206   MUL   125252 * (3)+ = 165252 100000   PS = 11
                                        ;*****************************************************************

014002  010701                          SCOPE                   ;TEST OF MULTIPLY
014004  012700  125252                  MOV     #125252,%0      ;LOAD MULTIPLICAN WITH 125252
014010  070023                          MUL     (3)+,%0         ;MULTIPLY 125252 * (3)+
014012  013767  177776  000436          MOV     @#PS,PSW        ;SAVE PS
014020  122767  000011  000430          CMPB    #11,PSW         ;IS PS = 11
014026  001401                          BEQ     .+4
014030  000000                          HLT                     ;PS IS WRONG
014032  022700  165252                  CMP     #165252,%0      ;IS HIGH ORDER = 165252
014036  001401                          BEQ     .+4
014040  000000                          HLT                     ;HIGH ORDER IS WRONG
014042  022701  100000                  CMP     #100000,%0!1    ;IS LOW ORDER = 100000
014046  001401                          BEQ     .+4
014050  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 207   MUL   125252 * -(3) = 165252 100000   PS = 11
                                ;*****************************************************************

014052  010701                          SCOPE                   ;TEST OF MULTIPLY
014054  012700  125252                  MOV     #125252,%0      ;LOAD MULTIPLICAN WITH 125252
014060  070043                          MUL     -(3),%0         ;MULTIPLY 125252 * -(3)
014062  013767  177776  000366          MOV     @#PS,PSW        ;SAVE PS
014070  122767  000011  000360          CMPB    #11,PSW         ;IS PS = 11
014076  001401                          BEQ     .+4
014100  000000                          HLT                     ;PS IS WRONG
014102  022700  165252                  CMP     #165252,%0      ;IS HIGH ORDER = 165252
014106  001401                          BEQ     .+4
014110  000000                          HLT                     ;HIGH ORDER IS WRONG
014112  022701  100000                  CMP     #100000,%011    ;IS LOW ORDER = 100000
014116  001401                          BEQ     .+4
014120  000000                          HLT                     ;LOW ORDER IS WRONG


                                ;*****************************************************************
                                ;TEST 210   MUL   125252 * 2(4) = 165252 100000   PS = 11
                                ;*****************************************************************

014122  010701                          SCOPE                   ;TEST OF MULTIPLY
014124  012700  125252                  MOV     #125252,%0      ;LOAD MULTIPLICAN WITH 125252
014130  070064  000002                  MUL     2(4),%0         ;MULTIPLY 125252 * 2(4)
014134  013767  177776  000314          MOV     @#PS,PSW        ;SAVE PS
014142  122767  000011  000306          CMPB    #11,PSW         ;IS PS = 11
014150  001401                          BEQ     .+4
014152  000000                          HLT                     ;PS IS WRONG
014154  022700  165252                  CMP     #165252,%0      ;IS HIGH ORDER = 165252
014160  001401                          BEQ     .+4
014162  000000                          HLT                     ;HIGH ORDER IS WRONG
014164  022701  100000                  CMP     #100000,%011    ;IS LOW ORDER = 100000
014170  001401                          BEQ     .+4
014172  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 211   MUL   125252 * @(4) = 165252 100000   PS = 11
                                        ;*****************************************************************

014174  010701                          SCOPE                   ;TEST OF MULTIPLY
014176  012700  125252                  MOV     #125252,%0      ;LOAD MULTIPLICAN WITH 125252
014202  070074  000000                  MUL     @(4),%0         ;MULTIPLY 125252 * @(4)
014206  013767  177776  000242          MOV     @#PS,PSW        ;SAVE PS
014214  122767  000011  000234          CMPB    #11,PSW         ;IS PS = 11
014222  001401                          BEQ     .+4
014224  000000                          HLT                     ;PS IS WRONG
014226  022700  165252                  CMP     #165252,%0      ;IS HIGH ORDER = 165252
014232  001401                          BEQ     .+4
014234  000000                          HLT                     ;HIGH ORDER IS WRONG
014236  022701  100000                  CMP     #100000,%011    ;IS LOW ORDER = 100000
014242  001401                          BEQ     .+4
014244  000000                          HLT                     ;LOW ORDER IS WRONG

                                        ;*****************************************************************
                                        ;TEST 212   MUL   125252 * @(4)+ = 165252 100000   PS = 11
                                        ;*****************************************************************

014246  010701                          SCOPE                   ;TEST OF MULTIPLY
014250  012700  125252                  MOV     #125252,%0      ;LOAD MULTIPLICAN WITH 125252
014254  070034                          MUL     @(4)+,%0        ;MULTIPLY 125252 * @(4)+
014256  013767  177776  000172          MOV     @#PS,PSW        ;SAVE PS
014264  122767  000011  000164          CMPB    #11,PSW         ;IS PS = 11
014272  001401                          BEQ     .+4
014274  000000                          HLT                     ;PS IS WRONG
014276  022700  165252                  CMP     #165252,%0      ;IS HIGH ORDER = 165252
014302  001401                          BEQ     .+4
014304  000000                          HLT                     ;HIGH ORDER IS WRONG
014306  022701  100000                  CMP     #100000,%011    ;IS LOW ORDER = 100000
014312  001401                          BEQ     .+4
014314  000000                          HLT                     ;LOW ORDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 213   MUL   125252 * @-(4) = 165252 100000   PS = 11
                                ;*****************************************************************

014316  010701                          SCOPE                   ;TEST OF MULTIPLY
014320  012700  125252                  MOV     #125252,%0      ;LOAD MULTIPLICAN WITH 125252
014324  070054                          MUL     @-(4),%0        ;MULTIPLY 125252 * @-(4)
014326  013767  177776  000122          MOV     @#PS,PSW        ;SAVE PS
014334  122767  000011  000114          CMPB    #11,PSW         ;IS PS = 11
014342  001401                          BEQ     .+4
014344  000000                          HLT                     ;PS IS WRONG
014346  022700  165252                  CMP     #165252,%0      ;IS HIGH ORDER = 165252
014352  001401                          BEQ     .+4
014354  000000                          HLT                     ;HIGH ORDER IS WRONG
014356  022701  100000                  CMP     #100000,%0      ;IS LOW ORDER = 100000
014362  001401                          BEQ     .+4
014364  000000                          HLT                     ;LOW ORDER IS WRONG


014366  005267  164436                  INC     ICNT
014372  016737  164432  177570          MOV     ICNT,@#DISPLAY
014400  022767  020000  164372          CMP     #20000,ICNT
014406  001402                          BEQ     .+6
014410  000167  164366                  JMP     BEG
014414  005067  164360                  CLR     ICNT
014420  105737  177564                  TSTB    @#177564
014424  100375                          BPL     .-4
014426  112737  000007  177566          MOVB    #7,@#177566
014434  013700  000042                  MOV     @#42,%0         ;GET MONITOR RETURN ADDRESS
014440  001404                          BEQ     1$              ;SKIP IF NONE
014442  004710                          JSR     7,(0)           ;GO BACK TO THE MONITOR
014444  000240                          NOP
014446  000240                          NOP
014450  000240                          NOP
014452  000137  000200          1$:     JMP     @#200           ;RESTART THE PROGRAM

014456  000000                  PSW:    0
014460  177777                  S0:     -1
014462  040000                  S1:     40000
014464  014462                  S2:     S1
014466  040000                  S3:     40000

        000001                  .END
```

IDENTIFICATION

PRODUCT CODE:	MAINDEC-11-DCKBL-A1-D
PRODUCT NAME:	DIV INSTRUCTION TEST
DATE CREATED:	MARCH 15, 1972
MAINTAINER:	DIAGNOSTIC GROUP
AUTHOR:	B. BRAIN

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1,0 ABSTRACT

THIS PROGRAM WILL INCREMENTLY TEST AND ISOLATE SIMPLE MALFUNCTION
RELATED TO THE DIV INSTRUCTION

2,0 REQUIREMENTS

2,1 EQUIPMENT
BASIC 11/45 SYSTEM OR
11/40 WITH KE11-E OPTION

2,2 STORAGE
THIS PROGRAM USES 0 THRU 17500

2,3 PRELIMINARY PROGRAMS
D0AA THRU D0MA

3,0 LOADING PROCEDURE
LOAD PROGRAM USING ABS LOADER

4,0 STARTING PROCEDURE
LOAD ADDRESS 200, PRESS START, THE PROGRAM WILL LOOP
AND RING BELL ON PASS COMPLETION,

5,0 OPERATING PROCEDURE

5,1 SWITCH SETTINGS
NONE

5,2 SUBROUTINE ABSTRACTS

5,2,1 SCOPE
SCOPE IS A MOVE PC,R1 AND STORES THE PC+2 IN R1,

5,2,2 HLT
HLT IS A HALT INSTRUCTION,

6,0 ERRORS
ALL ERRORS WILL CAUSE A HALT
TRAP AND INTERRUPT ERRORS WILL CAUSE A HALT AT VECTOR+2,

6,1 ERROR RECOVERY
PRESS CONTINUE TO PROCEDE TO NEXT TEST

6,2 ERROR LOOPING
TO LOOP ON AN ERROR, PLACE A BRANCH TO THE PREVIOUS SCOPE
INSTRUCTION IN PLACE OF THE HALT INSTRUCTION,
NOTE THAT IF THE ERROR IS INTERMITTANT THAT THE TEST WILL
DROP THRU THE HALT AND PROCEED TO THE NEXT TEST,
THEREFORE, TO LOOP THE TEST CONTINUOSLY REPLACE THE BEQ ,+4
INSTRUCTION IMMEDIATLY PRECEEDING THE HALT WITH A BRANCH
BACK TO THE PREVIOUS SCOPE,

TO LOOP ON TRAP FAILURES, PATCH IN THE FOLLOWING ROUTINE
AT THE ADDRESS OF THE TRAP VECTOR,

```
TRAPVEC:        TRAPVEC+4
TRAPVEC+2:      0
TRAPVEC+4:      012716  ;MOVE SCOPE ADDRESS TO STACK
TRAPVEC+6:      ADDRESS ;ADDRESS OF PREVIOUS SCOPE
TRAPVEC+10:     000006  ;RETURN TO TEST AT SCOPE
```

RESTORE ALL LOCATIONS BEFORE PROCEEDING TO NEXT TEST.

7,0 RESTRICTIONS
NONE

8,0 MISCELLANEOUS
ON TRAP ERRORS THE STACK POINTER(R6) WILL CONTAIN THE ADDRESS WHERE THE TRAP OCCURED.

8,1 EXECUTION TIME
THE PROGRAM TAKES ABOUT 1 MINUTE.

8,2 STACK POINTER
THE PROGRAM INITIALLY SETS THE STACK POINTER AT 500.

9,0 PROGRAM DESCRIPTION
THIS IS A TEST OF THE DIV INSTRUCTION, IT TESTS DIV ON DIFERENT NUMBER PATERNS IN ALL EVEN REGISTERS, ERROR CONDITIONS ARE ALSO CHECKED

```
                                        .TITLE  MAINDEC-11-DCKBL-A  DIV TEST
                                        ;COPYRIGHT 1972, DIGITAL EQUIPMENT CORP., MAYNARD, MASS
                                        ;PROGRAM BY BOB BRAIN

                                        .ENABL  ABS

                    000000              .=0                             ;TRAP CATCHER 0 - 776

                    000000              HLT=HALT
                    010701              SCOPE=10701
                    000006              SP=%6
                    000007              PC=%7
                    177570              SWR=177570
                    177570              DISPLAY=SWR
                    177776              PS=177776
                    000000              DUMMY=0
                    000001              N=1
                    000000              M=0

                    000200              .=200
000200  000167  000576                          JMP     BEG
                    001000              .=      1000
001000  000000                          ICNT:   0                       ;PASS COUNT

001002  012706  000500          BEG:    MOV     #500,%6                 ;** STACK AT 500 **
001006  005037  177776                  CLR     @#PS
001012  032737  001000  177570          BIT     #1000,@#SWR             ;WHICH REGISTER SET?
001020  001403                          BEQ     .+10
001022  012737  004000  177776          MOV     #4000,@#PS              ;ALTERNATE!
001030  032767  000400  176532          BIT     #400,SWR
001036  001403                          BEQ     .+10
001040  116767  176524  176722          MOVB    SWR,177770
```

```
                                ;*****************************************************************
                                ;TEST 1  DIV  0 4 / #2 = 2  REM = 0  PS = 0
                                ;*****************************************************************

001046  010701                          SCOPE                   ;TEST OF DIVIDE
001050  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
001054  012701  000004                  MOV     #4,%0+1         ;LOAD LOW ORDER WITH 4
001060  071027  000002                  DIV     #2,%0           ;DIVIDE BY #2
001064  013767  177776  010530          MOV     @#PS,PSW        ;SAVE PS

001072  122767  000000  010522          CMPB    #0,PSW          ;IS PS = 0
001100  001401                          BEQ     .+4
001102  000000                          HLT                     ;PS IS WRONG

001104  022700  000002                  CMP     #2,%0           ;IS QUOTIENT = 2
001110  001401                          BEQ     .+4
001112  000000                          HLT                     ;QUOTIENT IS WRONG

001114  022701  000000                  CMP     #0,%0+1         ;IS REMAINDER = 0
001120  001401                          BEQ     .+4
001122  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 2  DIV  0 9. / #3 = 3  REM = 0  PS = 0
                                ;*****************************************************************

001124  010701                          SCOPE                   ;TEST OF DIVIDE
001126  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
001132  012701  000011                  MOV     #9.,%0+1        ;LOAD LOW ORDER WITH 9.
001136  071027  000003                  DIV     #3,%0           ;DIVIDE BY #3
001142  013767  177776  010452          MOV     @#PS,PSW        ;SAVE PS

001150  122767  000000  010444          CMPB    #0,PSW          ;IS PS = 0
001156  001401                          BEQ     .+4
001160  000000                          HLT                     ;PS IS WRONG

001162  022700  000003                  CMP     #3,%0           ;IS QUOTIENT = 3
001166  001401                          BEQ     .+4
001170  000000                          HLT                     ;QUOTIENT IS WRONG

001172  022701  000000                  CMP     #0,%0+1         ;IS REMAINDER = 0
001176  001401                          BEQ     .+4
001200  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 3  DIV  -1 -4 / #2 = -2  REM = 0  PS = 10
                                ;*****************************************************************

001202  010701                          SCOPE                   ;TEST OF DIVIDE
001204  012700  177777                  MOV     #-1,%0          ;LOAD HIGH ORDER WITH -1
001210  012701  177774                  MOV     #-4,%0+1        ;LOAD LOW ORDER WITH -4
001214  071027  000002                  DIV     #2,%0           ;DIVIDE BY #2
001220  013767  177776  010374          MOV     @#PS,PSW        ;SAVE PS

001226  122767  000010  010366          CMPB    #10,PSW         ;IS PS = 10
001234  001401                          BEQ     .+4
001236  000000                          HLT                     ;PS IS WRONG

001240  022700  177776                  CMP     #-2,%0          ;IS QUOTIENT = -2
001244  001401                          BEQ     .+4
001246  000000                          HLT                     ;QUOTIENT IS WRONG

001250  022701  000000                  CMP     #0,%0+1         ;IS REMAINDER = 0
001254  001401                          BEQ     .+4
001256  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 4  DIV  -1 -9, / #3 = -3  REM = 0  PS = 10
                                ;*****************************************************************

001260  010701                          SCOPE                   ;TEST OF DIVIDE
001262  012700  177777                  MOV     #-1,%0          ;LOAD HIGH ORDER WITH -1
001266  012701  177767                  MOV     #-9.,%0+1       ;LOAD LOW ORDER WITH -9.
001272  071027  000003                  DIV     #3,%0           ;DIVIDE BY #3
001276  013767  177776  010316          MOV     @#PS,PSW        ;SAVE PS

001304  122767  000010  010310          CMPB    #10,PSW         ;IS PS = 10
001312  001401                          BEQ     .+4
001314  000000                          HLT                     ;PS IS WRONG

001316  022700  177775                  CMP     #-3,%0          ;IS QUOTIENT = -3
001322  001401                          BEQ     .+4
001324  000000                          HLT                     ;QUOTIENT IS WRONG

001326  022701  000000                  CMP     #0,%0+1         ;IS REMAINDER = 0
001332  001401                          BEQ     .+4
001334  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 5  DIV  0 9. / #2 = 4  REM = 1  PS = 0
                                ;*****************************************************************

001336  010701                          SCOPE                   ;TEST OF DIVIDE
001340  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
001344  012701  000011                  MOV     #9.,%0+1        ;LOAD LOW ORDER WITH 9.
001350  071027  000002                  DIV     #2,%0           ;DIVIDE BY #2
001354  013767  177776  010240          MOV     @#PS,PSW        ;SAVE PS

001362  122767  000000  010232          CMPB    #0,PSW          ;IS PS = 0
001370  001401                          BEQ     .+4
001372  000000                          HLT                     ;PS IS WRONG

001374  022700  000004                  CMP     #4,%0           ;IS QUOTIENT = 4
001400  001401                          BEQ     .+4
001402  000000                          HLT                     ;QUOTIENT IS WRONG

001404  022701  000001                  CMP     #1,%0+1         ;IS REMAINDER = 1
001410  001401                          BEQ     .+4
001412  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 6  DIV  -1 -9. / #2 = -4  REM = -1  PS = 10
                                ;*****************************************************************

001414  010701                          SCOPE                   ;TEST OF DIVIDE
001416  012700  177777                  MOV     #-1,%0          ;LOAD HIGH ORDER WITH -1
001422  012701  177767                  MOV     #-9.,%0+1       ;LOAD LOW ORDER WITH -9.
001426  071027  000002                  DIV     #2,%0           ;DIVIDE BY #2
001432  013767  177776  010162          MOV     @#PS,PSW        ;SAVE PS

001440  122767  000010  010154          CMPB    #10,PSW         ;IS PS = 10
001446  001401                          BEQ     .+4
001450  000000                          HLT                     ;PS IS WRONG

001452  022700  177774                  CMP     #-4,%0          ;IS QUOTIENT = -4
001456  001401                          BEQ     .+4
001460  000000                          HLT                     ;QUOTIENT IS WRONG

001462  022701  177777                  CMP     #-1,%0+1        ;IS REMAINDER = -1
001466  001401                          BEQ     .+4
001470  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 7  DIV  0 9. / #-2 = -4  REM = 1  PS = 10
                                ;*****************************************************************

001472  010701                          SCOPE                   ;TEST OF DIVIDE
001474  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
001500  012701  000011                  MOV     #9.,%0+1        ;LOAD LOW ORDER WITH 9.
001504  071027  177776                  DIV     #-2,%0          ;DIVIDE BY #-2
001510  013767  177776  010104          MOV     @#PS,PSW        ;SAVE PS

001516  122767  000010  010076          CMPB    #10,PSW         ;IS PS = 10
001524  001401                          BEQ     .+4
001526  000000                          HLT                     ;PS IS WRONG

001530  022700  177774                  CMP     #-4,%0          ;IS QUOTIENT = -4
001534  001401                          BEQ     .+4
001536  000000                          HLT                     ;QUOTIENT IS WRONG

001540  022701  000001                  CMP     #1,%0+1         ;IS REMAINDER = 1
001544  001401                          BEQ     .+4
001546  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 10  DIV  0 2 / #3 = 0  REM = 2  PS = 4
                                ;*****************************************************************

001550  010701                          SCOPE                   ;TEST OF DIVIDE
001552  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
001556  012701  000002                  MOV     #2,%0+1         ;LOAD LOW ORDER WITH 2
001562  071027  000003                  DIV     #3,%0           ;DIVIDE BY #3
001566  013767  177776  010026          MOV     @#PS,PSW        ;SAVE PS

001574  122767  000004  010020          CMPB    #4,PSW          ;IS PS = 4
001602  001401                          BEQ     .+4
001604  000000                          HLT                     ;PS IS WRONG

001606  022700  000000                  CMP     #0,%0           ;IS QUOTIENT = 0
001612  001401                          BEQ     .+4
001614  000000                          HLT                     ;QUOTIENT IS WRONG

001616  022701  000002                  CMP     #2,%0+1         ;IS REMAINDER = 2
001622  001401                          BEQ     .+4
001624  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 11  DIV  0 2 / #-3 = 0  REM = 2  PS = 4
                                        ;*****************************************************************

001626  010701                          SCOPE                   ;TEST OF DIVIDE
001630  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
001634  012701  000002                  MOV     #2,%0+1         ;LOAD LOW ORDER WITH 2
001640  071027  177775                  DIV     #-3,%0          ;DIVIDE BY #-3
001644  013767  177776  007750          MOV     @#PS,PSW        ;SAVE PS

001652  122767  000004  007742          CMPB    #4,PSW          ;IS PS = 4
001660  001401                          BEQ     .+4
001662  000000                          HLT                     ;PS IS WRONG

001664  022700  000000                  CMP     #0,%0           ;IS QUOTIENT = 0
001670  001401                          BEQ     .+4
001672  000000                          HLT                     ;QUOTIENT IS WRONG

001674  022701  000002                  CMP     #2,%0+1         ;IS REMAINDER = 2
001700  001401                          BEQ     .+4
001702  000000                          HLT                     ;REMAINDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 12  DIV  -1 -2 / #3 = 0  REM = -2  PS = 4
                                        ;*****************************************************************

001704  010701                          SCOPE                   ;TEST OF DIVIDE
001706  012700  177777                  MOV     #-1,%0          ;LOAD HIGH ORDER WITH -1
001712  012701  177776                  MOV     #-2,%0+1        ;LOAD LOW ORDER WITH -2
001716  071027  000003                  DIV     #3,%0           ;DIVIDE BY #3
001722  013767  177776  007672          MOV     @#PS,PSW        ;SAVE PS

001730  122767  000004  007664          CMPB    #4,PSW          ;IS PS = 4
001736  001401                          BEQ     .+4
001740  000000                          HLT                     ;PS IS WRONG

001742  022700  000000                  CMP     #0,%0           ;IS QUOTIENT = 0
001746  001401                          BEQ     .+4
001750  000000                          HLT                     ;QUOTIENT IS WRONG

001752  022701  177776                  CMP     #-2,%0+1        ;IS REMAINDER = -2
001756  001401                          BEQ     .+4
001760  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 13  DIV  -1 -1 / #1 = -1  REM = 0  PS = 10
                                ;*****************************************************************

001762  010701                          SCOPE                   ;TEST OF DIVIDE
001764  012700  177777                  MOV     #-1,%0          ;LOAD HIGH ORDER WITH -1
001770  012701  177777                  MOV     #-1,%0+1        ;LOAD LOW ORDER WITH -1
001774  071027  000001                  DIV     #1,%0           ;DIVIDE BY #1
002000  013767  177776  007614          MOV     @#PS,PSW        ;SAVE PS

002006  122767  000010  007606          CMPB    #10,PSW         ;IS PS = 10
002014  001401                          BEQ     .+4
002016  000000                          HLT                     ;PS IS WRONG

002020  022700  177777                  CMP     #-1,%0          ;IS QUOTIENT = -1
002024  001401                          BEQ     .+4
002026  000000                          HLT                     ;QUOTIENT IS WRONG

002030  022701  000000                  CMP     #0,%0+1         ;IS REMAINDER = 0
002034  001401                          BEQ     .+4
002036  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 14  DIV  0 0 / #1 = 0  REM = 0  PS = 4
                                ;*****************************************************************

002040  010701                          SCOPE                   ;TEST OF DIVIDE
002042  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
002046  012701  000000                  MOV     #0,%0+1         ;LOAD LOW ORDER WITH 0
002052  071027  000001                  DIV     #1,%0           ;DIVIDE BY #1
002056  013767  177776  007536          MOV     @#PS,PSW        ;SAVE PS

002064  122767  000004  007530          CMPB    #4,PSW          ;IS PS = 4
002072  001401                          BEQ     .+4
002074  000000                          HLT                     ;PS IS WRONG

002076  022700  000000                  CMP     #0,%0           ;IS QUOTIENT = 0
002102  001401                          BEQ     .+4
002104  000000                          HLT                     ;QUOTIENT IS WRONG

002106  022701  000000                  CMP     #0,%0+1         ;IS REMAINDER = 0
002112  001401                          BEQ     .+4
002114  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                        ;*****************************************************************
                        ;TEST 15  DIV  -1 125252 / #2 = 152525  REM = 0  PS = 10
                        ;*****************************************************************

002116  010701                         SCOPE                   ;TEST OF DIVIDE
002120  012700  177777                 MOV     #-1,%0          ;LOAD HIGH ORDER WITH -1
002124  012701  125252                 MOV     #125252,%0+1    ;LOAD LOW ORDER WITH 125252
002130  071027  000002                 DIV     #2,%0           ;DIVIDE BY #2
002134  013767  177776  007460         MOV     @#PS,PSW        ;SAVE PS

002142  122767  000010  007452         CMPB    #10,PSW         ;IS PS = 10
002150  001401                         BEQ     .+4
002152  000000                         HLT                     ;PS IS WRONG

002154  022700  152525                 CMP     #152525,%0      ;IS QUOTIENT = 152525
002160  001401                         BEQ     .+4
002162  000000                         HLT                     ;QUOTIENT IS WRONG

002164  022701  000000                 CMP     #0,%0+1         ;IS REMAINDER = 0
002170  001401                         BEQ     .+4
002172  000000                         HLT                     ;REMAINDER IS WRONG


                        ;*****************************************************************
                        ;TEST 16  DIV  0 52525 / #2 = 25252  REM = 1  PS = 0
                        ;*****************************************************************

002174  010701                         SCOPE                   ;TEST OF DIVIDE
002176  012700  000000                 MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
002202  012701  052525                 MOV     #52525,%0+1     ;LOAD LOW ORDER WITH 52525
002206  071027  000002                 DIV     #2,%0           ;DIVIDE BY #2
002212  013767  177776  007402         MOV     @#PS,PSW        ;SAVE PS

002220  122767  000000  007374         CMPB    #0,PSW          ;IS PS = 0
002226  001401                         BEQ     .+4
002230  000000                         HLT                     ;PS IS WRONG

002232  022700  025252                 CMP     #25252,%0       ;IS QUOTIENT = 25252
002236  001401                         BEQ     .+4
002240  000000                         HLT                     ;QUOTIENT IS WRONG

002242  022701  000001                 CMP     #1,%0+1         ;IS REMAINDER = 1
002246  001401                         BEQ     .+4
002250  000000                         HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 17  DIV  -1 -1 / #-1 = 1  REM = 0  PS = 0
                                ;*****************************************************************

002252  010701                          SCOPE                   ;TEST OF DIVIDE
002254  012700  177777                  MOV     #-1,%0          ;LOAD HIGH ORDER WITH -1
002260  012701  177777                  MOV     #-1,%0+1        ;LOAD LOW ORDER WITH -1
002264  071027  177777                  DIV     #-1,%0          ;DIVIDE BY #-1
002270  013767  177776  007324          MOV     @#PS,PSW        ;SAVE PS

002276  122767  000000  007316          CMPB    #0,PSW          ;IS PS = 0
002304  001401                          BEQ     .+4
002306  000000                          HLT                     ;PS IS WRONG

002310  022700  000001                  CMP     #1,%0           ;IS QUOTIENT = 1
002314  001401                          BEQ     .+4
002316  000000                          HLT                     ;QUOTIENT IS WRONG

002320  022701  000000                  CMP     #0,%0+1         ;IS REMAINDER = 0
002324  001401                          BEQ     .+4
002326  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 20  DIV  25253 0 / #125252 = 100000  REM = 0  PS = 10
                                ;*****************************************************************

002330  010701                          SCOPE                   ;TEST OF DIVIDE
002332  012700  025253                  MOV     #25253,%0       ;LOAD HIGH ORDER WITH 25253
002336  012701  000000                  MOV     #0,%0+1         ;LOAD LOW ORDER WITH 0
002342  071027  125252                  DIV     #125252,%0      ;DIVIDE BY #125252
002346  013767  177776  007246          MOV     @#PS,PSW        ;SAVE PS

002354  122767  000010  007240          CMPB    #10,PSW         ;IS PS = 10
002362  001401                          BEQ     .+4
002364  000000                          HLT                     ;PS IS WRONG

002366  022700  100000                  CMP     #100000,%0      ;IS QUOTIENT = 100000
002372  001401                          BEQ     .+4
002374  000000                          HLT                     ;QUOTIENT IS WRONG

002376  022701  000000                  CMP     #0,%0+1         ;IS REMAINDER = 0
002402  001401                          BEQ     .+4
002404  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 21  DIV  25253 1 / #125252 = 100000  REM = 1  PS = 10
                                ;*****************************************************************

002406  010701                          SCOPE                   ;TEST OF DIVIDE
002410  012700  025253                  MOV     #25253,%0       ;LOAD HIGH ORDER WITH 25253
002414  012701  000001                  MOV     #1,%0+1         ;LOAD LOW ORDER WITH 1
002420  071027  125252                  DIV     #125252,%0      ;DIVIDE BY #125252
002424  013767  177776  007170          MOV     @#PS,PSW        ;SAVE PS

002432  122767  000010  007162          CMPB    #10,PSW         ;IS PS = 10
002440  001401                          BEQ     .+4
002442  000000                          HLT                     ;PS IS WRONG

002444  022700  100000                  CMP     #100000,%0      ;IS QUOTIENT = 100000
002450  001401                          BEQ     .+4
002452  000000                          HLT                     ;QUOTIENT IS WRONG

002454  022701  000001                  CMP     #1,%0+1         ;IS REMAINDER = 1
002460  001401                          BEQ     .+4
002462  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 22  DIV  37777 77777 / #77777 = 77777  REM = 77776  PS = 0
                                ;*****************************************************************

002464  010701                          SCOPE                   ;TEST OF DIVIDE
002466  012700  037777                  MOV     #37777,%0       ;LOAD HIGH ORDER WITH 37777
002472  012701  077777                  MOV     #77777,%0+1     ;LOAD LOW ORDER WITH 77777
002476  071027  077777                  DIV     #77777,%0       ;DIVIDE BY #77777
002502  013767  177776  007112          MOV     @#PS,PSW        ;SAVE PS

002510  122767  000000  007104          CMPB    #0,PSW          ;IS PS = 0
002516  001401                          BEQ     .+4
002520  000000                          HLT                     ;PS IS WRONG

002522  022700  077777                  CMP     #77777,%0       ;IS QUOTIENT = 77777
002526  001401                          BEQ     .+4
002530  000000                          HLT                     ;QUOTIENT IS WRONG

002532  022701  077776                  CMP     #77776,%0+1     ;IS REMAINDER = 77776
002536  001401                          BEQ     .+4
002540  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 23  DIV  0 100000 / #2 = 40000  REM = 0  PS = 0
                                ;*****************************************************************

002542  010701                          SCOPE                   ;TEST OF DIVIDE
002544  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
002550  012701  100000                  MOV     #100000,%0+1    ;LOAD LOW ORDER WITH 100000
002554  071027  000002                  DIV     #2,%0           ;DIVIDE BY #2
002560  013767  177776  007034          MOV     @#PS,PSW        ;SAVE PS

002566  122767  000000  007026          CMPB    #0,PSW          ;IS PS = 0
002574  001401                          BEQ     .+4
002576  000000                          HLT                     ;PS IS WRONG

002600  022700  040000                  CMP     #40000,%0       ;IS QUOTIENT = 40000
002604  001401                          BEQ     .+4
002606  000000                          HLT                     ;QUOTIENT IS WRONG

002610  022701  000000                  CMP     #0,%0+1         ;IS REMAINDER = 0
002614  001401                          BEQ     .+4
002616  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 24  DIV  0 100001 / #2 = 40000  REM = 1  PS = 0
                                ;*****************************************************************

002620  010701                          SCOPE                   ;TEST OF DIVIDE
002622  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
002626  012701  100001                  MOV     #100001,%0+1    ;LOAD LOW ORDER WITH 100001
002632  071027  000002                  DIV     #2,%0           ;DIVIDE BY #2
002636  013767  177776  006756          MOV     @#PS,PSW        ;SAVE PS

002644  122767  000000  006750          CMPB    #0,PSW          ;IS PS = 0
002652  001401                          BEQ     .+4
002654  000000                          HLT                     ;PS IS WRONG

002656  022700  040000                  CMP     #40000,%0       ;IS QUOTIENT = 40000
002662  001401                          BEQ     .+4
002664  000000                          HLT                     ;QUOTIENT IS WRONG

002666  022701  000001                  CMP     #1,%0+1         ;IS REMAINDER = 1
002672  001401                          BEQ     .+4
002674  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 25  DIV  20000 37776 / #77777 = 40000  REM = 77776  PS = 0
                                ;*****************************************************************

002676  010701                          SCOPE                   ;TEST OF DIVIDE
002700  012700  020000                  MOV     #20000,%0       ;LOAD HIGH ORDER WITH 20000
002704  012701  037776                  MOV     #37776,%0+1     ;LOAD LOW ORDER WITH 37776
002710  071027  077777                  DIV     #77777,%0       ;DIVIDE BY #77777
002714  013767  177776  006700          MOV     @#PS,PSW        ;SAVE PS

002722  122767  000000  006672          CMPB    #0,PSW          ;IS PS = 0
002730  001401                          BEQ     .+4
002732  000000                          HLT                     ;PS IS WRONG

002734  022700  040000                  CMP     #40000,%0       ;IS QUOTIENT = 40000
002740  001401                          BEQ     .+4
002742  000000                          HLT                     ;QUOTIENT IS WRONG

002744  022701  077776                  CMP     #77776,%0+1     ;IS REMAINDER = 77776
002750  001401                          BEQ     .+4
002752  000000                          HLT                     ;REMAINDER IS WRONG

                                ;*****************************************************************
                                ;TEST 26  DIV  177777 77777 / #177776 = 40000  REM = 177777  PS = 0
                                ;*****************************************************************

002754  010701                          SCOPE                   ;TEST OF DIVIDE
002756  012700  177777                  MOV     #177777,%0      ;LOAD HIGH ORDER WITH 177777
002762  012701  077777                  MOV     #77777,%0+1     ;LOAD LOW ORDER WITH 77777
002766  071027  177776                  DIV     #177776,%0      ;DIVIDE BY #177776
002772  013767  177776  006622          MOV     @#PS,PSW        ;SAVE PS

003000  122767  000000  006614          CMPB    #0,PSW          ;IS PS = 0
003006  001401                          BEQ     .+4
003010  000000                          HLT                     ;PS IS WRONG

003012  022700  040000                  CMP     #40000,%0       ;IS QUOTIENT = 40000
003016  001401                          BEQ     .+4
003020  000000                          HLT                     ;QUOTIENT IS WRONG

003022  022701  177777                  CMP     #177777,%0+1    ;IS REMAINDER = 177777
003026  001401                          BEQ     .+4
003030  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 27  DIV  157777 100001 / #100000 = 40000  REM = 100001  PS = 0
                                ;*****************************************************************

003032  010701                          SCOPE                   ;TEST OF DIVIDE
003034  012700  157777                  MOV     #157777,%0      ;LOAD HIGH ORDER WITH 157777
003040  012701  100001                  MOV     #100001,%0+1    ;LOAD LOW ORDER WITH 100001
003044  071027  100000                  DIV     #100000,%0      ;DIVIDE BY #100000
003050  013767  177776  006544          MOV     @#PS,PSW        ;SAVE PS

003056  122767  000000  006536          CMPB    #0,PSW          ;IS PS = 0
003064  001401                          BEQ     .+4
003066  000000                          HLT                     ;PS IS WRONG

003070  022700  040000                  CMP     #40000,%0       ;IS QUOTIENT = 40000
003074  001401                          BEQ     .+4
003076  000000                          HLT                     ;QUOTIENT IS WRONG

003100  022701  100001                  CMP     #100001,%0+1    ;IS REMAINDER = 100001
003104  001401                          BEQ     .+4
003106  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 30  DIV  0 52525 / #52525 = 1  REM = 0  PS = 0
                                ;*****************************************************************

003110  010701                          SCOPE                   ;TEST OF DIVIDE
003112  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
003116  012701  052525                  MOV     #52525,%0+1     ;LOAD LOW ORDER WITH 52525
003122  071027  052525                  DIV     #52525,%0       ;DIVIDE BY #52525
003126  013767  177776  006466          MOV     @#PS,PSW        ;SAVE PS

003134  122767  000000  006460          CMPB    #0,PSW          ;IS PS = 0
003142  001401                          BEQ     .+4
003144  000000                          HLT                     ;PS IS WRONG

003146  022700  000001                  CMP     #1,%0           ;IS QUOTIENT = 1
003152  001401                          BEQ     .+4
003154  000000                          HLT                     ;QUOTIENT IS WRONG

003156  022701  000000                  CMP     #0,%0+1         ;IS REMAINDER = 0
003162  001401                          BEQ     .+4
003164  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 31  DIV  0 52524 / #52525 = 0  REM = 52524  PS = 4
                                ;*****************************************************************

003166  010701                          SCOPE                   ;TEST OF DIVIDE
003170  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
003174  012701  052524                  MOV     #52524,%0+1     ;LOAD LOW ORDER WITH 52524
003200  071027  052525                  DIV     #52525,%0       ;DIVIDE BY #52525
003204  013767  177776  006410          MOV     @#PS,PSW        ;SAVE PS

003212  122767  000004  006402          CMPB    #4,PSW          ;IS PS = 4
003220  001401                          BEQ     .+4
003222  000000                          HLT                     ;PS IS WRONG

003224  022700  000000                  CMP     #0,%0           ;IS QUOTIENT = 0
003230  001401                          BEQ     .+4
003232  000000                          HLT                     ;QUOTIENT IS WRONG

003234  022701  052524                  CMP     #52524,%0+1     ;IS REMAINDER = 52524
003240  001401                          BEQ     .+4
003242  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 32  DIV  0 0 / #125252 = 0  REM = 0  PS = 4
                                ;*****************************************************************

003244  010701                          SCOPE                   ;TEST OF DIVIDE
003246  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
003252  012701  000000                  MOV     #0,%0+1         ;LOAD LOW ORDER WITH 0
003256  071027  125252                  DIV     #125252,%0      ;DIVIDE BY #125252
003262  013767  177776  006332          MOV     @#PS,PSW        ;SAVE PS

003270  122767  000004  006324          CMPB    #4,PSW          ;IS PS = 4
003276  001401                          BEQ     .+4
003300  000000                          HLT                     ;PS IS WRONG

003302  022700  000000                  CMP     #0,%0           ;IS QUOTIENT = 0
003306  001401                          BEQ     .+4
003310  000000                          HLT                     ;QUOTIENT IS WRONG

003312  022701  000000                  CMP     #0,%0+1         ;IS REMAINDER = 0
003316  001401                          BEQ     .+4
003320  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 33  DIV  177614 66560 / #40342 = 177070  REM = 0  PS = 10
                                ;*****************************************************************

003322  010701                          SCOPE                   ;TEST OF DIVIDE
003324  012700  177614                  MOV     #177614,%0      ;LOAD HIGH ORDER WITH 177614
003330  012701  066560                  MOV     #66560,%0+1     ;LOAD LOW ORDER WITH 66560
003334  071027  040342                  DIV     #40342,%0       ;DIVIDE BY #40342
003340  013767  177776  006254          MOV     @#PS,PSW        ;SAVE PS

003346  122767  000010  006246          CMPB    #10,PSW         ;IS PS = 10
003354  001401                          BEQ     .+4
003356  000000                          HLT                     ;PS IS WRONG

003360  022700  177070                  CMP     #177070,%0      ;IS QUOTIENT = 177070
003364  001401                          BEQ     .+4
003366  000000                          HLT                     ;QUOTIENT IS WRONG

003370  022701  000000                  CMP     #0,%0+1         ;IS REMAINDER = 0
003374  001401                          BEQ     .+4
003376  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 34  DIV  0 77777 / #0 = DUMMY  REM = DUMMY  PS = 3
                                ;*****************************************************************

003400  010701                          SCOPE                   ;TEST OF DIVIDE
003402  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
003406  012701  077777                  MOV     #77777,%0+1     ;LOAD LOW ORDER WITH 77777
003412  071027  000000                  DIV     #0,%0           ;DIVIDE BY #0
003416  013767  177776  006176          MOV     @#PS,PSW        ;SAVE PS
003424  042767  000014  006170          BIC     #14,PSW

003432  122767  000003  006162          CMPB    #3,PSW          ;IS PS = 3
003440  001401                          BEQ     .+4
003442  000000                          HLT                     ;PS IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 35  DIV  77777 177777 / #2 = DUMMY  REM = DUMMY  PS = 2
                                ;*****************************************************************

003444  010701                          SCOPE                   ;TEST OF DIVIDE
003446  012700  077777                  MOV     #77777,%0       ;LOAD HIGH ORDER WITH 77777
003452  012701  177777                  MOV     #177777,%0+1    ;LOAD LOW ORDER WITH 177777
003456  071027  000002                  DIV     #2,%0           ;DIVIDE BY #2
003462  013767  177776  006132          MOV     @#PS,PSW        ;SAVE PS
003470  042767  000014  006124          BIC     #14,PSW

003476  122767  000002  006116          CMPB    #2,PSW          ;IS PS = 2
003504  001401                          BEQ     .+4
003506  000000                          HLT                     ;PS IS WRONG


                                ;*****************************************************************
                                ;TEST 36  DIV  0 4 / #2 = 2  REM = 0  PS = 0
                                ;*****************************************************************

003510  010701                          SCOPE                   ;TEST OF DIVIDE
003512  012702  000000                  MOV     #0,%2           ;LOAD HIGH ORDER WITH 0
003516  012703  000004                  MOV     #4,%2+1         ;LOAD LOW ORDER WITH 4
003522  071227  000002                  DIV     #2,%2           ;DIVIDE BY #2
003526  013767  177776  006066          MOV     @#PS,PSW        ;SAVE PS

003534  122767  000000  006060          CMPB    #0,PSW          ;IS PS = 0
003542  001401                          BEQ     .+4
003544  000000                          HLT                     ;PS IS WRONG

003546  022702  000002                  CMP     #2,%2           ;IS QUOTIENT = 2
003552  001401                          BEQ     .+4
003554  000000                          HLT                     ;QUOTIENT IS WRONG

003556  022703  000000                  CMP     #0,%2+1         ;IS REMAINDER = 0
003562  001401                          BEQ     .+4
003564  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 37  DIV  0 9. / #3 = 3  REM = 0  PS = 0
                                ;*****************************************************************

003566  010701                          SCOPE                   ;TEST OF DIVIDE
003570  012702  000000                  MOV     #0,%2           ;LOAD HIGH ORDER WITH 0
003574  012703  000011                  MOV     #9.,%2+1        ;LOAD LOW ORDER WITH 9.
003600  071227  000003                  DIV     #3,%2           ;DIVIDE BY #3
003604  013767  177776  006010          MOV     @#PS,PSW        ;SAVE PS

003612  122767  000000  006002          CMPB    #0,PSW          ;IS PS = 0
003620  001401                          BEQ     .+4
003622  000000                          HLT                     ;PS IS WRONG

003624  022702  000003                  CMP     #3,%2           ;IS QUOTIENT = 3
003630  001401                          BEQ     .+4
003632  000000                          HLT                     ;QUOTIENT IS WRONG

003634  022703  000000                  CMP     #0,%2+1         ;IS REMAINDER = 0
003640  001401                          BEQ     .+4
003642  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 40  DIV  -1 -4 / #2 = -2  REM = 0  PS = 10
                                ;*****************************************************************

003644  010701                          SCOPE                   ;TEST OF DIVIDE
003646  012702  177777                  MOV     #-1,%2          ;LOAD HIGH ORDER WITH -1
003652  012703  177774                  MOV     #-4,%2+1        ;LOAD LOW ORDER WITH -4
003656  071227  000002                  DIV     #2,%2           ;DIVIDE BY #2
003662  013767  177776  005732          MOV     @#PS,PSW        ;SAVE PS

003670  122767  000010  005724          CMPB    #10,PSW         ;IS PS = 10
003676  001401                          BEQ     .+4
003700  000000                          HLT                     ;PS IS WRONG

003702  022702  177776                  CMP     #-2,%2          ;IS QUOTIENT = -2
003706  001401                          BEQ     .+4
003710  000000                          HLT                     ;QUOTIENT IS WRONG

003712  022703  000000                  CMP     #0,%2+1         ;IS REMAINDER = 0
003716  001401                          BEQ     .+4
003720  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 41  DIV  -1 -9. / #3 = -3  REM = 0  PS = 10
                                ;*****************************************************************

003722  010701                          SCOPE                   ;TEST OF DIVIDE
003724  012702  177777                  MOV     #-1,%2          ;LOAD HIGH ORDER WITH -1
003730  012703  177767                  MOV     #-9.,%2+1       ;LOAD LOW ORDER WITH -9.
003734  071227  000003                  DIV     #3,%2           ;DIVIDE BY #3
003740  013767  177776  005654          MOV     @#PS,PSW        ;SAVE PS

003746  122767  000010  005646          CMPB    #10,PSW         ;IS PS = 10
003754  001401                          BEQ     .+4
003756  000000                          HLT                     ;PS IS WRONG

003760  022702  177775                  CMP     #-3,%2          ;IS QUOTIENT = -3
003764  001401                          BEQ     .+4
003766  000000                          HLT                     ;QUOTIENT IS WRONG

003770  022703  000000                  CMP     #0,%2+1         ;IS REMAINDER = 0
003774  001401                          BEQ     .+4
003776  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 42  DIV  0 9. / #2 = 4  REM = 1  PS = 0
                                ;*****************************************************************

004000  010701                          SCOPE                   ;TEST OF DIVIDE
004002  012702  000000                  MOV     #0,%2           ;LOAD HIGH ORDER WITH 0
004006  012703  000011                  MOV     #9.,%2+1        ;LOAD LOW ORDER WITH 9.
004012  071227  000002                  DIV     #2,%2           ;DIVIDE BY #2
004016  013767  177776  005576          MOV     @#PS,PSW        ;SAVE PS

004024  122767  000000  005570          CMPB    #0,PSW          ;IS PS = 0
004032  001401                          BEQ     .+4
004034  000000                          HLT                     ;PS IS WRONG

004036  022702  000004                  CMP     #4,%2           ;IS QUOTIENT = 4
004042  001401                          BEQ     .+4
004044  000000                          HLT                     ;QUOTIENT IS WRONG

004046  022703  000001                  CMP     #1,%2+1         ;IS REMAINDER = 1
004052  001401                          BEQ     .+4
004054  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 43  DIV  -1 -9. / #2 = -4  REM = -1  PS = 10
                                ;*****************************************************************

004056  010701                          SCOPE                   ;TEST OF DIVIDE
004060  012702  177777                  MOV     #-1,%2          ;LOAD HIGH ORDER WITH -1
004064  012703  177767                  MOV     #-9.,,%2+1      ;LOAD LOW ORDER WITH -9.
004070  071227  000002                  DIV     #2,%2           ;DIVIDE BY #2
004074  013767  177776  005520          MOV     @#PS,PSW        ;SAVE PS

004102  122767  000010  005512          CMPB    #10,PSW         ;IS PS = 10
004110  001401                          BEQ     .+4
004112  000000                          HLT                     ;PS IS WRONG

004114  022702  177774                  CMP     #-4,%2          ;IS QUOTIENT = -4
004120  001401                          BEQ     .+4
004122  000000                          HLT                     ;QUOTIENT IS WRONG

004124  022703  177777                  CMP     #-1,%2+1        ;IS REMAINDER = -1
004130  001401                          BEQ     .+4
004132  000000                          HLT                     ;REMAINDER IS WRONG

                                ;*****************************************************************
                                ;TEST 44  DIV  0 9. / #-2 = -4  REM = 1  PS = 10
                                ;*****************************************************************

004134  010701                          SCOPE                   ;TEST OF DIVIDE
004136  012702  000000                  MOV     #0,%2           ;LOAD HIGH ORDER WITH 0
004142  012703  000011                  MOV     #9.,,%2+1       ;LOAD LOW ORDER WITH 9.
004146  071227  177776                  DIV     #-2,%2          ;DIVIDE BY #-2
004152  013767  177776  005442          MOV     @#PS,PSW        ;SAVE PS

004160  122767  000010  005434          CMPB    #10,PSW         ;IS PS = 10
004166  001401                          BEQ     .+4
004170  000000                          HLT                     ;PS IS WRONG

004172  022702  177774                  CMP     #-4,%2          ;IS QUOTIENT = -4
004176  001401                          BEQ     .+4
004200  000000                          HLT                     ;QUOTIENT IS WRONG

004202  022703  000001                  CMP     #1,%2+1         ;IS REMAINDER = 1
004206  001401                          BEQ     .+4
004210  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 45  DIV  0 2 / #3 = 0  REM = 2  PS = 4
                                        ;*****************************************************************

004212  010701                          SCOPE                   ;TEST OF DIVIDE
004214  012702  000000                  MOV     #0,%2           ;LOAD HIGH ORDER WITH 0
004220  012703  000002                  MOV     #2,%2+1         ;LOAD LOW ORDER WITH 2
004224  071227  000003                  DIV     #3,%2           ;DIVIDE BY #3
004230  013767  177776  005364          MOV     @#PS,PSW        ;SAVE PS

004236  122767  000004  005356          CMPB    #4,PSW          ;IS PS = 4
004244  001401                          BEQ     .+4
004246  000000                          HLT                     ;PS IS WRONG

004250  022702  000000                  CMP     #0,%2           ;IS QUOTIENT = 0
004254  001401                          BEQ     .+4
004256  000000                          HLT                     ;QUOTIENT IS WRONG

004260  022703  000002                  CMP     #2,%2+1         ;IS REMAINDER = 2
004264  001401                          BEQ     .+4
004266  000000                          HLT                     ;REMAINDER IS WRONG

                                        ;*****************************************************************
                                        ;TEST 46  DIV  0 2 / #-3 = 0  REM = 2  PS = 4
                                        ;*****************************************************************

004270  010701                          SCOPE                   ;TEST OF DIVIDE
004272  012702  000000                  MOV     #0,%2           ;LOAD HIGH ORDER WITH 0
004276  012703  000002                  MOV     #2,%2+1         ;LOAD LOW ORDER WITH 2
004302  071227  177775                  DIV     #-3,%2          ;DIVIDE BY #-3
004306  013767  177776  005306          MOV     @#PS,PSW        ;SAVE PS

004314  122767  000004  005300          CMPB    #4,PSW          ;IS PS = 4
004322  001401                          BEQ     .+4
004324  000000                          HLT                     ;PS IS WRONG

004326  022702  000000                  CMP     #0,%2           ;IS QUOTIENT = 0
004332  001401                          BEQ     .+4
004334  000000                          HLT                     ;QUOTIENT IS WRONG

004336  022703  000002                  CMP     #2,%2+1         ;IS REMAINDER = 2
004342  001401                          BEQ     .+4
004344  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 47  DIV  -1 -2 / #3 = 0  REM = -2  PS = 4
                                ;*****************************************************************

004346  010701                          SCOPE                   ;TEST OF DIVIDE
004350  012702  177777                  MOV     #-1,%2          ;LOAD HIGH ORDER WITH -1
004354  012703  177776                  MOV     #-2,%2+1        ;LOAD LOW ORDER WITH -2
004360  071227  000003                  DIV     #3,%2           ;DIVIDE BY #3
004364  013767  177776  005230          MOV     @#PS,PSW        ;SAVE PS

004372  122767  000004  005222          CMPB    #4,PSW          ;IS PS = 4
004400  001401                          BEQ     .+4
004402  000000                          HLT                     ;PS IS WRONG

004404  022702  000000                  CMP     #0,%2           ;IS QUOTIENT = 0
004410  001401                          BEQ     .+4
004412  000000                          HLT                     ;QUOTIENT IS WRONG

004414  022703  177776                  CMP     #-2,%2+1        ;IS REMAINDER = -2
004420  001401                          BEQ     .+4
004422  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 50  DIV  -1 -1 / #1 = -1  REM = 0  PS = 10
                                ;*****************************************************************

004424  010701                          SCOPE                   ;TEST OF DIVIDE
004426  012702  177777                  MOV     #-1,%2          ;LOAD HIGH ORDER WITH -1
004432  012703  177777                  MOV     #-1,%2+1        ;LOAD LOW ORDER WITH -1
004436  071227  000001                  DIV     #1,%2           ;DIVIDE BY #1
004442  013767  177776  005152          MOV     @#PS,PSW        ;SAVE PS

004450  122767  000010  005144          CMPB    #10,PSW         ;IS PS = 10
004456  001401                          BEQ     .+4
004460  000000                          HLT                     ;PS IS WRONG

004462  022702  177777                  CMP     #-1,%2          ;IS QUOTIENT = -1
004466  001401                          BEQ     .+4
004470  000000                          HLT                     ;QUOTIENT IS WRONG

004472  022703  000000                  CMP     #0,%2+1         ;IS REMAINDER = 0
004476  001401                          BEQ     .+4
004500  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 51  DIV  0 0 / #1 = 0  REM = 0  PS = 4
                                ;*****************************************************************

004502  010701                          SCOPE                   ;TEST OF DIVIDE
004504  012702  000000                  MOV     #0,%2           ;LOAD HIGH ORDER WITH 0
004510  012703  000000                  MOV     #0,%2+1         ;LOAD LOW ORDER WITH 0
004514  071227  000001                  DIV     #1,%2           ;DIVIDE BY #1
004520  013767  177776  005074          MOV     @#PS,PSW        ;SAVE PS

004526  122767  000004  005066          CMPB    #4,PSW          ;IS PS = 4
004534  001401                          BEQ     .+4
004536  000000                          HLT                     ;PS IS WRONG

004540  022702  000000                  CMP     #0,%2           ;IS QUOTIENT = 0
004544  001401                          BEQ     .+4
004546  000000                          HLT                     ;QUOTIENT IS WRONG

004550  022703  000000                  CMP     #0,%2+1         ;IS REMAINDER = 0
004554  001401                          BEQ     .+4
004556  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 52  DIV  -1 125252 / #2 = 152525  REM = 0  PS = 10
                                ;*****************************************************************

004560  010701                          SCOPE                   ;TEST OF DIVIDE
004562  012702  177777                  MOV     #-1,%2          ;LOAD HIGH ORDER WITH -1
004566  012703  125252                  MOV     #125252,%2+1    ;LOAD LOW ORDER WITH 125252
004572  071227  000002                  DIV     #2,%2           ;DIVIDE BY #2
004576  013767  177776  005016          MOV     @#PS,PSW        ;SAVE PS

004604  122767  000010  005010          CMPB    #10,PSW         ;IS PS = 10
004612  001401                          BEQ     .+4
004614  000000                          HLT                     ;PS IS WRONG

004616  022702  152525                  CMP     #152525,%2      ;IS QUOTIENT = 152525
004622  001401                          BEQ     .+4
004624  000000                          HLT                     ;QUOTIENT IS WRONG

004626  022703  000000                  CMP     #0,%2+1         ;IS REMAINDER = 0
004632  001401                          BEQ     .+4
004634  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 53  DIV  0 52525 / #2 = 25252  REM = 1  PS = 0
                                ;*****************************************************************

004636  010701                          SCOPE                   ;TEST OF DIVIDE
004640  012702  000000                  MOV     #0,%2           ;LOAD HIGH ORDER WITH 0
004644  012703  052525                  MOV     #52525,%2+1     ;LOAD LOW ORDER WITH 52525
004650  071227  000002                  DIV     #2,%2           ;DIVIDE BY #2
004654  013767  177776  004740          MOV     @#PS,PSW        ;SAVE PS

004662  122767  000000  004732          CMPB    #0,PSW          ;IS PS = 0
004670  001401                          BEQ     .+4
004672  000000                          HLT                     ;PS IS WRONG

004674  022702  025252                  CMP     #25252,%2       ;IS QUOTIENT = 25252
004700  001401                          BEQ     .+4
004702  000000                          HLT                     ;QUOTIENT IS WRONG

004704  022703  000001                  CMP     #1,%2+1         ;IS REMAINDER = 1
004710  001401                          BEQ     .+4
004712  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 54  DIV  -1 -1 / #-1 = 1  REM = 0  PS = 0
                                ;*****************************************************************

004714  010701                          SCOPE                   ;TEST OF DIVIDE
004716  012702  177777                  MOV     #-1,%2          ;LOAD HIGH ORDER WITH -1
004722  012703  177777                  MOV     #-1,%2+1        ;LOAD LOW ORDER WITH -1
004726  071227  177777                  DIV     #-1,%2          ;DIVIDE BY #-1
004732  013767  177776  004662          MOV     @#PS,PSW        ;SAVE PS

004740  122767  000000  004654          CMPB    #0,PSW          ;IS PS = 0
004746  001401                          BEQ     .+4
004750  000000                          HLT                     ;PS IS WRONG

004752  022702  000001                  CMP     #1,%2           ;IS QUOTIENT = 1
004756  001401                          BEQ     .+4
004760  000000                          HLT                     ;QUOTIENT IS WRONG

004762  022703  000000                  CMP     #0,%2+1         ;IS REMAINDER = 0
004766  001401                          BEQ     .+4
004770  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 55  DIV  25253 0 / #125252 = 100000  REM = 0  PS = 10
                                ;*****************************************************************

004772  010701                          SCOPE                   ;TEST OF DIVIDE
004774  012702  025253                  MOV     #25253,%2       ;LOAD HIGH ORDER WITH 25253
005000  012703  000000                  MOV     #0,%2+1         ;LOAD LOW ORDER WITH 0
005004  071227  125252                  DIV     #125252,%2      ;DIVIDE BY #125252
005010  013767  177776  004604          MOV     @#PS,PSW        ;SAVE PS

005016  122767  000010  004576          CMPB    #10,PSW         ;IS PS = 10
005024  001401                          BEQ     .+4
005026  000000                          HLT                     ;PS IS WRONG

005030  022702  100000                  CMP     #100000,%2      ;IS QUOTIENT = 100000
005034  001401                          BEQ     .+4
005036  000000                          HLT                     ;QUOTIENT IS WRONG

005040  022703  000000                  CMP     #0,%2+1         ;IS REMAINDER = 0
005044  001401                          BEQ     .+4
005046  000000                          HLT                     ;REMAINDER IS WRONG

                                ;*****************************************************************
                                ;TEST 56  DIV  25253 1 / #125252 = 100000  REM = 1  PS = 10
                                ;*****************************************************************

005050  010701                          SCOPE                   ;TEST OF DIVIDE
005052  012702  025253                  MOV     #25253,%2       ;LOAD HIGH ORDER WITH 25253
005056  012703  000001                  MOV     #1,%2+1         ;LOAD LOW ORDER WITH 1
005062  071227  125252                  DIV     #125252,%2      ;DIVIDE BY #125252
005066  013767  177776  004526          MOV     @#PS,PSW        ;SAVE PS

005074  122767  000010  004520          CMPB    #10,PSW         ;IS PS = 10
005102  001401                          BEQ     .+4
005104  000000                          HLT                     ;PS IS WRONG

005106  022702  100000                  CMP     #100000,%2      ;IS QUOTIENT = 100000
005112  001401                          BEQ     .+4
005114  000000                          HLT                     ;QUOTIENT IS WRONG

005116  022703  000001                  CMP     #1,%2+1         ;IS REMAINDER = 1
005122  001401                          BEQ     .+4
005124  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 57  DIV  37777 77777 / #77777 = 77777  REM = 77776  PS = 0
                                ;*****************************************************************

005126  010701                          SCOPE                   ;TEST OF DIVIDE
005130  012702  037777                  MOV     #37777,%2       ;LOAD HIGH ORDER WITH 37777
005134  012703  077777                  MOV     #77777,%2+1     ;LOAD LOW ORDER WITH 77777
005140  071227  077777                  DIV     #77777,%2       ;DIVIDE BY #77777
005144  013767  177776  004450          MOV     @#PS,PSW        ;SAVE PS

005152  122767  000000  004442          CMPB    #0,PSW          ;IS PS = 0
005160  001401                          BEQ     .+4
005162  000000                          HLT                     ;PS IS WRONG

005164  022702  077777                  CMP     #77777,%2       ;IS QUOTIENT = 77777
005170  001401                          BEQ     .+4
005172  000000                          HLT                     ;QUOTIENT IS WRONG

005174  022703  077776                  CMP     #77776,%2+1     ;IS REMAINDER = 77776
005200  001401                          BEQ     .+4
005202  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 60  DIV  0 100000 / #2 = 40000  REM = 0  PS = 0
                                ;*****************************************************************

005204  010701                          SCOPE                   ;TEST OF DIVIDE
005206  012702  000000                  MOV     #0,%2           ;LOAD HIGH ORDER WITH 0
005212  012703  100000                  MOV     #100000,%2+1    ;LOAD LOW ORDER WITH 100000
005216  071227  000002                  DIV     #2,%2           ;DIVIDE BY #2
005222  013767  177776  004372          MOV     @#PS,PSW        ;SAVE PS

005230  122767  000000  004364          CMPB    #0,PSW          ;IS PS = 0
005236  001401                          BEQ     .+4
005240  000000                          HLT                     ;PS IS WRONG

005242  022702  040000                  CMP     #40000,%2       ;IS QUOTIENT = 40000
005246  001401                          BEQ     .+4
005250  000000                          HLT                     ;QUOTIENT IS WRONG

005252  022703  000000                  CMP     #0,%2+1         ;IS REMAINDER = 0
005256  001401                          BEQ     .+4
005260  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 61  DIV  0 100001 / #2 = 40000  REM = 1  PS = 0
                                        ;*****************************************************************

005262  010701                          SCOPE                   ;TEST OF DIVIDE
005264  012702  000000                  MOV     #0,%2           ;LOAD HIGH ORDER WITH 0
005270  012703  100001                  MOV     #100001,%2+1    ;LOAD LOW ORDER WITH 100001
005274  071227  000002                  DIV     #2,%2           ;DIVIDE BY #2
005300  013767  177776  004314          MOV     @#PS,PSW        ;SAVE PS

005306  122767  000000  004306          CMPB    #0,PSW          ;IS PS = 0
005314  001401                          BEQ     .+4
005316  000000                          HLT                     ;PS IS WRONG

005320  022702  040000                  CMP     #40000,%2       ;IS QUOTIENT = 40000
005324  001401                          BEQ     .+4
005326  000000                          HLT                     ;QUOTIENT IS WRONG

005330  022703  000001                  CMP     #1,%2+1         ;IS REMAINDER = 1
005334  001401                          BEQ     .+4
005336  000000                          HLT                     ;REMAINDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 62  DIV  20000 37776 / #77777 = 40000  REM = 77776  PS = 0
                                        ;*****************************************************************

005340  010701                          SCOPE                   ;TEST OF DIVIDE
005342  012702  020000                  MOV     #20000,%2       ;LOAD HIGH ORDER WITH 20000
005346  012703  037776                  MOV     #37776,%2+1     ;LOAD LOW ORDER WITH 37776
005352  071227  077777                  DIV     #77777,%2       ;DIVIDE BY #77777
005356  013767  177776  004236          MOV     @#PS,PSW        ;SAVE PS

005364  122767  000000  004230          CMPB    #0,PSW          ;IS PS = 0
005372  001401                          BEQ     .+4
005374  000000                          HLT                     ;PS IS WRONG

005376  022702  040000                  CMP     #40200,%2       ;IS QUOTIENT = 40000
005402  001401                          BEQ     .+4
005404  000000                          HLT                     ;QUOTIENT IS WRONG

005406  022703  077776                  CMP     #77776,%2+1     ;IS REMAINDER = 77776
005412  001401                          BEQ     .+4
005414  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 63  DIV  177777 77777 / #177776 = 40000  REM = 177777  PS = 0
                                ;*****************************************************************

005416  010701                          SCOPE                   ;TEST OF DIVIDE
005420  012702  177777                  MOV     #177777,%2      ;LOAD HIGH ORDER WITH 177777
005424  012703  077777                  MOV     #77777,%2+1     ;LOAD LOW ORDER WITH 77777
005430  071227  177776                  DIV     #177776,%2      ;DIVIDE BY #177776
005434  013767  177776  004160          MOV     @#PS,PSW        ;SAVE PS

005442  122767  000000  004152          CMPB    #0,PSW          ;IS PS = 0
005450  001401                          BEQ     .+4
005452  000000                          HLT                     ;PS IS WRONG

005454  022702  040000                  CMP     #40000,%2       ;IS QUOTIENT = 40000
005460  001401                          BEQ     .+4
005462  000000                          HLT                     ;QUOTIENT IS WRONG

005464  022703  177777                  CMP     #177777,%2+1    ;IS REMAINDER = 177777
005470  001401                          BEQ     .+4
005472  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 64  DIV  157777 100001 / #100000 = 40000  REM = 100001  PS = 0
                                ;*****************************************************************

005474  010701                          SCOPE                   ;TEST OF DIVIDE
005476  012702  157777                  MOV     #157777,%2      ;LOAD HIGH ORDER WITH 157777
005502  012703  100001                  MOV     #100001,%2+1    ;LOAD LOW ORDER WITH 100001
005506  071227  100000                  DIV     #100000,%2      ;DIVIDE BY #100000
005512  013767  177776  004102          MOV     @#PS,PSW        ;SAVE PS

005520  122767  000000  004074          CMPB    #0,PSW          ;IS PS = 0
005526  001401                          BEQ     .+4
005530  000000                          HLT                     ;PS IS WRONG

005532  022702  040000                  CMP     #40000,%2       ;IS QUOTIENT = 40000
005536  001401                          BEQ     .+4
005540  000000                          HLT                     ;QUOTIENT IS WRONG

005542  022703  100001                  CMP     #100001,%2+1    ;IS REMAINDER = 100001
005546  001401                          BEQ     .+4
005550  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 65  DIV  0 52525 / #52525 = 1  REM = 0  PS = 0
                                        ;*****************************************************************

005552  010701                          SCOPE                   ;TEST OF DIVIDE
005554  012702  000000                  MOV     #0,%2           ;LOAD HIGH ORDER WITH 0
005560  012703  052525                  MOV     #52525,%2+1     ;LOAD LOW ORDER WITH 52525
005564  071227  052525                  DIV     #52525,%2       ;DIVIDE BY #52525
005570  013767  177776  004024          MOV     @#PS,PSW        ;SAVE PS

005576  122767  000000  004016          CMPB    #0,PSW          ;IS PS = 0
005604  001401                          BEQ     .+4
005606  000000                          HLT                     ;PS IS WRONG

005610  022702  000001                  CMP     #1,%2           ;IS QUOTIENT = 1
005614  001401                          BEQ     .+4
005616  000000                          HLT                     ;QUOTIENT IS WRONG

005620  022703  000000                  CMP     #0,%2+1         ;IS REMAINDER = 0
005624  001401                          BEQ     .+4
005626  000000                          HLT                     ;REMAINDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 66  DIV  0 52524 / #52525 = 0  REM = 52524  PS = 4
                                        ;*****************************************************************

005630  010701                          SCOPE                   ;TEST OF DIVIDE
005632  012702  000000                  MOV     #0,%2           ;LOAD HIGH ORDER WITH 0
005636  012703  052524                  MOV     #52524,%2+1     ;LOAD LOW ORDER WITH 52524
005642  071227  052525                  DIV     #52525,%2       ;DIVIDE BY #52525
005646  013767  177776  003746          MOV     @#PS,PSW        ;SAVE PS

005654  122767  000004  003740          CMPB    #4,PSW          ;IS PS = 4
005662  001401                          BEQ     .+4
005664  000000                          HLT                     ;PS IS WRONG

005666  022702  000000                  CMP     #0,%2           ;IS QUOTIENT = 0
005672  001401                          BEQ     .+4
005674  000000                          HLT                     ;QUOTIENT IS WRONG

005676  022703  052524                  CMP     #52524,%2+1     ;IS REMAINDER = 52524
005702  001401                          BEQ     .+4
005704  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 67  DIV  0 0 / #125252 = 0  REM = 0  PS = 4
                                ;*****************************************************************

005706  010701                          SCOPE                   ;TEST OF DIVIDE
005710  012702  000000                  MOV     #0,%2           ;LOAD HIGH ORDER WITH 0
005714  012703  000000                  MOV     #0,%2+1         ;LOAD LOW ORDER WITH 0
005720  071227  125252                  DIV     #125252,%2      ;DIVIDE BY #125252
005724  013767  177776  003670          MOV     @#PS,PSW        ;SAVE PS

005732  122767  000004  003662          CMPB    #4,PSW          ;IS PS = 4
005740  001401                          BEQ     .+4
005742  000000                          HLT                     ;PS IS WRONG

005744  022702  000000                  CMP     #0,%2           ;IS QUOTIENT = 0
005750  001401                          BEQ     .+4
005752  000000                          HLT                     ;QUOTIENT IS WRONG

005754  022703  000000                  CMP     #0,%2+1         ;IS REMAINDER = 0
005760  001401                          BEQ     .+4
005762  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 70  DIV  177614 66560 / #40342 = 177070  REM = 0  PS = 10
                                ;*****************************************************************

005764  010701                          SCOPE                   ;TEST OF DIVIDE
005766  012702  177614                  MOV     #177614,%2      ;LOAD HIGH ORDER WITH 177614
005772  012703  066560                  MOV     #66560,%2+1     ;LOAD LOW ORDER WITH 66560
005776  071227  040342                  DIV     #40342,%2       ;DIVIDE BY #40342
006002  013767  177776  003612          MOV     @#PS,PSW        ;SAVE PS

006010  122767  000010  003604          CMPB    #10,PSW         ;IS PS = 10
006016  001401                          BEQ     .+4
006020  000000                          HLT                     ;PS IS WRONG

006022  022702  177070                  CMP     #177070,%2      ;IS QUOTIENT = 177070
006026  001401                          BEQ     .+4
006030  000000                          HLT                     ;QUOTIENT IS WRONG

006032  022703  000000                  CMP     #0,%2+1         ;IS REMAINDER = 0
006036  001401                          BEQ     .+4
006040  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 71  DIV  0 77777 / #0 = DUMMY  REM = DUMMY  PS = 3
                                ;*****************************************************************

006042  010701                          SCOPE                   ;TEST OF DIVIDE
006044  012702  000000                  MOV     #0,%2           ;LOAD HIGH ORDER WITH 0
006050  012703  077777                  MOV     #77777,%2+1     ;LOAD LOW ORDER WITH 77777
006054  071227  000000                  DIV     #0,%2           ;DIVIDE BY #0
006060  013767  177776  003534          MOV     @#PS,PSW        ;SAVE PS
006066  042767  000014  003526          BIC     #14,PSW

006074  122767  000003  003520          CMPB    #3,PSW          ;IS PS = 3
006102  001401                          BEQ     .+4
006104  000000                          HLT                     ;PS IS WRONG

                                ;*****************************************************************
                                ;TEST 72  DIV  77777 177777 / #2 = DUMMY  REM = DUMMY  PS = 2
                                ;*****************************************************************

006106  010701                          SCOPE                   ;TEST OF DIVIDE
006110  012702  077777                  MOV     #77777,%2       ;LOAD HIGH ORDER WITH 77777
006114  012703  177777                  MOV     #177777,%2+1    ;LOAD LOW ORDER WITH 177777
006120  071227  000002                  DIV     #2,%2           ;DIVIDE BY #2
006124  013767  177776  003470          MOV     @#PS,PSW        ;SAVE PS
006132  042767  000014  003462          BIC     #14,PSW

006140  122767  000002  003454          CMPB    #2,PSW          ;IS PS = 2
006146  001401                          BEQ     .+4
006150  000000                          HLT                     ;PS IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 73  DIV  0 4 / #2 = 2  REM = 0  PS = 0
                                        ;*****************************************************************

006152  010701                          SCOPE                   ;TEST OF DIVIDE
006154  012704  000000                  MOV     #0,%4           ;LOAD HIGH ORDER WITH 0
006160  012705  000004                  MOV     #4,%4+1         ;LOAD LOW ORDER WITH 4
006164  071427  000002                  DIV     #2,%4           ;DIVIDE BY #2
006170  013767  177776  003424          MOV     @#PS,PSW        ;SAVE PS

006176  122767  000000  003416          CMPB    #0,PSW          ;IS PS = 0
006204  001401                          BEQ     .+4
006206  000000                          HLT                     ;PS IS WRONG

006210  022704  000002                  CMP     #2,%4           ;IS QUOTIENT = 2
006214  001401                          BEQ     .+4
006216  000000                          HLT                     ;QUOTIENT IS WRONG

006220  022705  000000                  CMP     #0,%4+1         ;IS REMAINDER = 0
006224  001401                          BEQ     .+4
006226  000000                          HLT                     ;REMAINDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 74  DIV  0 9, / #3 = 3  REM = 0  PS = 0
                                        ;*****************************************************************

006230  010701                          SCOPE                   ;TEST OF DIVIDE
006232  012704  000000                  MOV     #0,%4           ;LOAD HIGH ORDER WITH 0
006236  012705  000011                  MOV     #9.,%4+1        ;LOAD LOW ORDER WITH 9.
006242  071427  000003                  DIV     #3,%4           ;DIVIDE BY #3
006246  013767  177776  003346          MOV     @#PS,PSW        ;SAVE PS

006254  122767  000000  003340          CMPB    #0,PSW          ;IS PS = 0
006262  001401                          BEQ     .+4
006264  000000                          HLT                     ;PS IS WRONG

006266  022704  000003                  CMP     #3,%4           ;IS QUOTIENT = 3
006272  001401                          BEQ     .+4
006274  000000                          HLT                     ;QUOTIENT IS WRONG

006276  022705  000000                  CMP     #0,%4+1         ;IS REMAINDER = 0
006302  001401                          BEQ     .+4
006304  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 75  DIV  -1 -4 / #2 = -2  REM = 0  PS = 10
                                        ;*****************************************************************

006306  010701                          SCOPE                   ;TEST OF DIVIDE
006310  012704  177777                  MOV     #-1,%4          ;LOAD HIGH ORDER WITH -1
006314  012705  177774                  MOV     #-4,%4+1        ;LOAD LOW ORDER WITH -4
006320  071427  000002                  DIV     #2,%4           ;DIVIDE BY #2
006324  013767  177776  003270          MOV     @#PS,PSW        ;SAVE PS

006332  122767  000010  003262          CMPB    #10,PSW         ;IS PS = 10
006340  001401                          BEQ     .+4
006342  000000                          HLT                     ;PS IS WRONG

006344  022704  177776                  CMP     #-2,%4          ;IS QUOTIENT = -2
006350  001401                          BEQ     .+4
006352  000000                          HLT                     ;QUOTIENT IS WRONG

006354  022705  000000                  CMP     #0,%4+1         ;IS REMAINDER = 0
006360  001401                          BEQ     .+4
006362  000000                          HLT                     ;REMAINDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 76  DIV  -1 -9. / #3 = -3  REM = 0  PS = 10
                                        ;*****************************************************************

006364  010701                          SCOPE                   ;TEST OF DIVIDE
006366  012704  177777                  MOV     #-1,%4          ;LOAD HIGH ORDER WITH -1
006372  012705  177767                  MOV     #-9.,%4+1       ;LOAD LOW ORDER WITH -9.
006376  071427  000003                  DIV     #3,%4           ;DIVIDE BY #3
006402  013767  177776  003212          MOV     @#PS,PSW        ;SAVE PS

006410  122767  000010  003204          CMPB    #10,PSW         ;IS PS = 10
006416  001401                          BEQ     .+4
006420  000000                          HLT                     ;PS IS WRONG

006422  022704  177775                  CMP     #-3,%4          ;IS QUOTIENT = -3
006426  001401                          BEQ     .+4
006430  000000                          HLT                     ;QUOTIENT IS WRONG

006432  022705  000000                  CMP     #0,%4+1         ;IS REMAINDER = 0
006436  001401                          BEQ     .+4
006440  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 77  DIV  0 9, / #2 = 4  REM = 1  PS = 0
                                ;*****************************************************************

006442  010701                          SCOPE                   ;TEST OF DIVIDE
006444  012704  000000                  MOV     #0,%4           ;LOAD HIGH ORDER WITH 0
006450  012705  000011                  MOV     #9.,%4+1        ;LOAD LOW ORDER WITH 9.
006454  071427  000002                  DIV     #2,%4           ;DIVIDE BY #2
006460  013767  177776  003134          MOV     @#PS,PSW        ;SAVE PS

006466  122767  000000  003126          CMPB    #0,PSW          ;IS PS = 0
006474  001401                          BEQ     .+4
006476  000000                          HLT                     ;PS IS WRONG

006500  022704  000004                  CMP     #4,%4           ;IS QUOTIENT = 4
006504  001401                          BEQ     .+4
006506  000000                          HLT                     ;QUOTIENT IS WRONG

006510  022705  000001                  CMP     #1,%4+1         ;IS REMAINDER = 1
006514  001401                          BEQ     .+4
006516  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 100  DIV  -1 -9, / #2 = -4  REM = -1  PS = 10
                                ;*****************************************************************

006520  010701                          SCOPE                   ;TEST OF DIVIDE
006522  012704  177777                  MOV     #-1,%4          ;LOAD HIGH ORDER WITH -1
006526  012705  177767                  MOV     #-9.,%4+1       ;LOAD LOW ORDER WITH -9.
006532  071427  000002                  DIV     #2,%4           ;DIVIDE BY #2
006536  013767  177776  003056          MOV     @#PS,PSW        ;SAVE PS

006544  122767  000010  003050          CMPB    #10,PSW         ;IS PS = 10
006552  001401                          BEQ     .+4
006554  000000                          HLT                     ;PS IS WRONG

006556  022704  177774                  CMP     #-4,%4          ;IS QUOTIENT = -4
006562  001401                          BEQ     .+4
006564  000000                          HLT                     ;QUOTIENT IS WRONG

006566  022705  177777                  CMP     #-1,%4+1        ;IS REMAINDER = -1
006572  001401                          BEQ     .+4
006574  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 101  DIV  0 9, / #-2 = -4  REM = 1  PS = 10
                                ;*****************************************************************

006576  010701                          SCOPE                   ;TEST OF DIVIDE
006600  012704  000000                  MOV     #0,%4           ;LOAD HIGH ORDER WITH 0
006604  012705  000011                  MOV     #9.,%4+1        ;LOAD LOW ORDER WITH 9.
006610  071427  177776                  DIV     #-2,%4          ;DIVIDE BY #-2
006614  013767  177776  003000          MOV     @#PS,PSW        ;SAVE PS

006622  122767  000010  002772          CMPB    #10,PSW         ;IS PS = 10
006630  001401                          BEQ     .+4
006632  000000                          HLT                     ;PS IS WRONG

006634  022704  177774                  CMP     #-4,%4          ;IS QUOTIENT = -4
006640  001401                          BEQ     .+4
006642  000000                          HLT                     ;QUOTIENT IS WRONG

006644  022705  000001                  CMP     #1,%4+1         ;IS REMAINDER = 1
006650  001401                          BEQ     .+4
006652  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 102  DIV  0 2 / #3 = 0  REM = 2  PS = 4
                                ;*****************************************************************

006654  010701                          SCOPE                   ;TEST OF DIVIDE
006656  012704  000000                  MOV     #0,%4           ;LOAD HIGH ORDER WITH 0
006662  012705  000002                  MOV     #2,%4+1         ;LOAD LOW ORDER WITH 2
006666  071427  000003                  DIV     #3,%4           ;DIVIDE BY #3
006672  013767  177776  002722          MOV     @#PS,PSW        ;SAVE PS

006700  122767  000004  002714          CMPB    #4,PSW          ;IS PS = 4
006706  001401                          BEQ     .+4
006710  000000                          HLT                     ;PS IS WRONG

006712  022704  000000                  CMP     #0,%4           ;IS QUOTIENT = 0
006716  001401                          BEQ     .+4
006720  000000                          HLT                     ;QUOTIENT IS WRONG

006722  022705  000002                  CMP     #2,%4+1         ;IS REMAINDER = 2
006726  001401                          BEQ     .+4
006730  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 103  DIV  0 2 / #-3 = 0  REM = 2  PS = 4
                                        ;*****************************************************************

006732  010701                          SCOPE                   ;TEST OF DIVIDE
006734  012704  000000                  MOV     #0,%4           ;LOAD HIGH ORDER WITH 0
006740  012705  000002                  MOV     #2,%4+1         ;LOAD LOW ORDER WITH 2
006744  071427  177775                  DIV     #-3,%4          ;DIVIDE BY #-3
006750  013767  177776  002644          MOV     @#PS,PSW        ;SAVE PS

006756  122767  000004  002636          CMPB    #4,PSW          ;IS PS = 4
006764  001401                          BEQ     .+4
006766  000000                          HLT                     ;PS IS WRONG

006770  022704  000000                  CMP     #0,%4           ;IS QUOTIENT = 0
006774  001401                          BEQ     .+4
006776  000000                          HLT                     ;QUOTIENT IS WRONG

007000  022705  000002                  CMP     #2,%4+1         ;IS REMAINDER = 2
007004  001401                          BEQ     .+4
007006  000000                          HLT                     ;REMAINDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 104  DIV  -1 -2 / #3 = 0  REM = -2  PS = 4
                                        ;*****************************************************************

007010  010701                          SCOPE                   ;TEST OF DIVIDE
007012  012704  177777                  MOV     #-1,%4          ;LOAD HIGH ORDER WITH -1
007016  012705  177776                  MOV     #-2,%4+1        ;LOAD LOW ORDER WITH -2
007022  071427  000003                  DIV     #3,%4           ;DIVIDE BY #3
007026  013767  177776  002566          MOV     @#PS,PSW        ;SAVE PS

007034  122767  000004  002560          CMPB    #4,PSW          ;IS PS = 4
007042  001401                          BEQ     .+4
007044  000000                          HLT                     ;PS IS WRONG

007046  022704  000000                  CMP     #0,%4           ;IS QUOTIENT = 0
007052  001401                          BEQ     .+4
007054  000000                          HLT                     ;QUOTIENT IS WRONG

007056  022705  177776                  CMP     #-2,%4+1        ;IS REMAINDER = -2
007062  001401                          BEQ     .+4
007064  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 105  DIV  -1 -1 / #1 = -1  REM = 0  PS = 10
                                ;*****************************************************************

007066  010701                          SCOPE                   ;TEST OF DIVIDE
007070  012704  177777                  MOV     #-1,%4          ;LOAD HIGH ORDER WITH -1
007074  012705  177777                  MOV     #-1,%4+1        ;LOAD LOW ORDER WITH -1
007100  071427  000001                  DIV     #1,%4           ;DIVIDE BY #1
007104  013767  177776  002510          MOV     @#PS,PSW        ;SAVE PS

007112  122767  000010  002502          CMPB    #10,PSW         ;IS PS = 10
007120  001401                          BEQ     .+4
007122  000000                          HLT                     ;PS IS WRONG

007124  022704  177777                  CMP     #-1,%4          ;IS QUOTIENT = -1
007130  001401                          BEQ     .+4
007132  000000                          HLT                     ;QUOTIENT IS WRONG

007134  022705  000000                  CMP     #0,%4+1         ;IS REMAINDER = 0
007140  001401                          BEQ     .+4
007142  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 106  DIV  0 0 / #1 = 0  REM = 0  PS = 4
                                ;*****************************************************************

007144  010701                          SCOPE                   ;TEST OF DIVIDE
007146  012704  000000                  MOV     #0,%4           ;LOAD HIGH ORDER WITH 0
007152  012705  000000                  MOV     #0,%4+1         ;LOAD LOW ORDER WITH 0
007156  071427  000001                  DIV     #1,%4           ;DIVIDE BY #1
007162  013767  177776  002432          MOV     @#PS,PSW        ;SAVE PS

007170  122767  000004  002424          CMPB    #4,PSW          ;IS PS = 4
007176  001401                          BEQ     .+4
007200  000000                          HLT                     ;PS IS WRONG

007202  022704  000000                  CMP     #0,%4           ;IS QUOTIENT = 0
007206  001401                          BEQ     .+4
007210  000000                          HLT                     ;QUOTIENT IS WRONG

007212  022705  000000                  CMP     #0,%4+1         ;IS REMAINDER = 0
007216  001401                          BEQ     .+4
007220  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 107  DIV  -1 125252 / #2 = 152525  REM = 0  PS = 10
                                ;*****************************************************************

007222  010701                          SCOPE                   ;TEST OF DIVIDE
007224  012704  177777                  MOV     #-1,%4          ;LOAD HIGH ORDER WITH -1
007230  012705  125252                  MOV     #125252,%4+1    ;LOAD LOW ORDER WITH 125252
007234  071427  000002                  DIV     #2,%4           ;DIVIDE BY #2
007240  013767  177776  002354          MOV     @#PS,PSW        ;SAVE PS

007246  122767  000010  002346          CMPB    #10,PSW         ;IS PS = 10
007254  001401                          BEQ     .+4
007256  000000                          HLT                     ;PS IS WRONG

007260  022704  152525                  CMP     #152525,%4      ;IS QUOTIENT = 152525
007264  001401                          BEQ     .+4
007266  000000                          HLT                     ;QUOTIENT IS WRONG

007270  022705  000000                  CMP     #0,%4+1         ;IS REMAINDER = 0
007274  001401                          BEQ     .+4
007276  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 110  DIV  0 52525 / #2 = 25252  REM = 1  PS = 0
                                ;*****************************************************************

007300  010701                          SCOPE                   ;TEST OF DIVIDE
007302  012704  000000                  MOV     #0,%4           ;LOAD HIGH ORDER WITH 0
007306  012705  052525                  MOV     #52525,%4+1     ;LOAD LOW ORDER WITH 52525
007312  071427  000002                  DIV     #2,%4           ;DIVIDE BY #2
007316  013767  177776  002276          MOV     @#PS,PSW        ;SAVE PS

007324  122767  000000  002270          CMPB    #0,PSW          ;IS PS = 0
007332  001401                          BEQ     .+4
007334  000000                          HLT                     ;PS IS WRONG

007336  022704  025252                  CMP     #25252,%4       ;IS QUOTIENT = 25252
007342  001401                          BEQ     .+4
007344  000000                          HLT                     ;QUOTIENT IS WRONG

007346  022705  000001                  CMP     #1,%4+1         ;IS REMAINDER = 1
007352  001401                          BEQ     .+4
007354  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 111  DIV  -1 -1 / #-1 = 1  REM = 0  PS = 0
                                ;*****************************************************************

007356  010701                          SCOPE                   ;TEST OF DIVIDE
007360  012704  177777                  MOV     #-1,%4          ;LOAD HIGH ORDER WITH -1
007364  012705  177777                  MOV     #-1,%4+1        ;LOAD LOW ORDER WITH -1
007370  071427  177777                  DIV     #-1,%4          ;DIVIDE BY #-1
007374  013767  177776  002220          MOV     @#PS,PSW        ;SAVE PS

007402  122767  000000  002212          CMPB    #0,PSW          ;IS PS = 0
007410  001401                          BEQ     .+4
007412  000000                          HLT                     ;PS IS WRONG

007414  022704  000001                  CMP     #1,%4           ;IS QUOTIENT = 1
007420  001401                          BEQ     .+4
007422  000000                          HLT                     ;QUOTIENT IS WRONG

007424  022705  000000                  CMP     #0,%4+1         ;IS REMAINDER = 0
007430  001401                          BEQ     .+4
007432  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 112  DIV  25253 0 / #125252 = 100000  REM = 0  PS = 10
                                ;*****************************************************************

007434  010701                          SCOPE                   ;TEST OF DIVIDE
007436  012704  025253                  MOV     #25253,%4       ;LOAD HIGH ORDER WITH 25253
007442  012705  000000                  MOV     #0,%4+1         ;LOAD LOW ORDER WITH 0
007446  071427  125252                  DIV     #125252,%4      ;DIVIDE BY #125252
007452  013767  177776  002142          MOV     @#PS,PSW        ;SAVE PS

007460  122767  000010  002134          CMPB    #10,PSW         ;IS PS = 10
007466  001401                          BEQ     .+4
007470  000000                          HLT                     ;PS IS WRONG

007472  022704  100000                  CMP     #100000,%4      ;IS QUOTIENT = 100000
007476  001401                          BEQ     .+4
007500  000000                          HLT                     ;QUOTIENT IS WRONG

007502  022705  000000                  CMP     #0,%4+1         ;IS REMAINDER = 0
007506  001401                          BEQ     .+4
007510  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 113  DIV  25253 1 / #125252 = 100000  REM = 1  PS = 10
                                        ;*****************************************************************

007512  010701                          SCOPE                   ;TEST OF DIVIDE
007514  012704  025253                  MOV     #25253,%4       ;LOAD HIGH ORDER WITH 25253
007520  012705  000001                  MOV     #1,%4+1         ;LOAD LOW ORDER WITH 1
007524  071427  125252                  DIV     #125252,%4      ;DIVIDE BY #125252
007530  013767  177776  002064          MOV     @#PS,PSW        ;SAVE PS

007536  122767  000010  002056          CMPB    #10,PSW         ;IS PS = 10
007544  001401                          BEQ     .+4
007546  000000                          HLT                     ;PS IS WRONG

007550  022704  100000                  CMP     #100000,%4      ;IS QUOTIENT = 100000
007554  001401                          BEQ     .+4
007556  000000                          HLT                     ;QUOTIENT IS WRONG

007560  022705  000001                  CMP     #1,%4+1         ;IS REMAINDER = 1
007564  001401                          BEQ     .+4
007566  000000                          HLT                     ;REMAINDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 114  DIV  37777 77777 / #77777 = 77777  REM = 77776  PS = 0
                                        ;*****************************************************************

007570  010701                          SCOPE                   ;TEST OF DIVIDE
007572  012704  037777                  MOV     #37777,%4       ;LOAD HIGH ORDER WITH 37777
007576  012705  077777                  MOV     #77777,%4+1     ;LOAD LOW ORDER WITH 77777
007602  071427  077777                  DIV     #77777,%4       ;DIVIDE BY #77777
007606  013767  177776  002006          MOV     @#PS,PSW        ;SAVE PS

007614  122767  000000  002000          CMPB    #0,PSW          ;IS PS = 0
007622  001401                          BEQ     .+4
007624  000000                          HLT                     ;PS IS WRONG

007626  022704  077777                  CMP     #77777,%4       ;IS QUOTIENT = 77777
007632  001401                          BEQ     .+4
007634  000000                          HLT                     ;QUCTIENT IS WRONG

007636  022705  077776                  CMP     #77776,%4+1     ;IS REMAINDER = 77776
007642  001401                          BEQ     .+4
007644  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 115  DIV  0 100000 / #2 = 40000  REM = 0  PS = 0
                                ;*****************************************************************

007646  010701                          SCOPE                   ;TEST OF DIVIDE
007650  012704  000000                  MOV     #0,%4           ;LOAD HIGH ORDER WITH 0
007654  012705  100000                  MOV     #100000,%4+1    ;LOAD LOW ORDER WITH 100000
007660  071427  000002                  DIV     #2,%4           ;DIVIDE BY #2
007664  013767  177776  001730          MOV     @#PS,PSW        ;SAVE PS

007672  122767  000000  001722          CMPB    #0,PSW          ;IS PS = 0
007700  001401                          BEQ     .+4
007702  000000                          HLT                     ;PS IS WRONG

007704  022704  040000                  CMP     #40000,%4       ;IS QUOTIENT = 40000
007710  001401                          BEQ     .+4
007712  000000                          HLT                     ;QUOTIENT IS WRONG

007714  022705  000000                  CMP     #0,%4+1         ;IS REMAINDER = 0
007720  001401                          BEQ     .+4
007722  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 116  DIV  0 100001 / #2 = 40000  REM = 1  PS = 0
                                ;*****************************************************************

007724  010701                          SCOPE                   ;TEST OF DIVIDE
007726  012704  000000                  MOV     #0,%4           ;LOAD HIGH ORDER WITH 0
007732  012705  100001                  MOV     #100001,%4+1    ;LOAD LOW ORDER WITH 100001
007736  071427  000002                  DIV     #2,%4           ;DIVIDE BY #2
007742  013767  177776  001652          MOV     @#PS,PSW        ;SAVE PS

007750  122767  000000  001644          CMPB    #0,PSW          ;IS PS = 0
007756  001401                          BEQ     .+4
007760  000000                          HLT                     ;PS IS WRONG

007762  022704  040000                  CMP     #40000,%4       ;IS QUOTIENT = 40000
007766  001401                          BEQ     .+4
007770  000000                          HLT                     ;QUOTIENT IS WRONG

007772  022705  000001                  CMP     #1,%4+1         ;IS REMAINDER = 1
007776  001401                          BEQ     .+4
010000  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 117  DIV  20000 37776 / #77777 = 40000  REM = 77776  PS = 0
                                        ;*****************************************************************

010002  010701                          SCOPE                   ;TEST OF DIVIDE
010004  012704  020000                  MOV     #20000,%4       ;LOAD HIGH ORDER WITH 20000
010010  012705  037776                  MOV     #37776,%4+1     ;LOAD LOW ORDER WITH 37776
010014  071427  077777                  DIV     #77777,%4       ;DIVIDE BY #77777
010020  013767  177776  001574          MOV     @#PS,PSW        ;SAVE PS

010026  122767  000000  001566          CMPB    #0,PSW          ;IS PS = 0
010034  001401                          BEQ     .+4
010036  000000                          HLT                     ;PS IS WRONG

010040  022704  040000                  CMP     #40000,%4       ;IS QUOTIENT = 40000
010044  001401                          BEQ     .+4
010046  000000                          HLT                     ;QUOTIENT IS WRONG

010050  022705  077776                  CMP     #77776,%4+1     ;IS REMAINDER = 77776
010054  001401                          BEQ     .+4
010056  000000                          HLT                     ;REMAINDER IS WRONG


                                        ;*****************************************************************
                                        ;TEST 120  DIV  177777 77777 / #177776 = 40000  REM = 177777  PS = 0
                                        ;*****************************************************************

010060  010701                          SCOPE                   ;TEST OF DIVIDE
010062  012704  177777                  MOV     #177777,%4      ;LOAD HIGH ORDER WITH 177777
010066  012705  077777                  MOV     #77777,%4+1     ;LOAD LOW ORDER WITH 77777
010072  071427  177776                  DIV     #177776,%4      ;DIVIDE BY #177776
010076  013767  177776  001516          MOV     @#PS,PSW        ;SAVE PS

010104  122767  000000  001510          CMPB    #0,PSW          ;IS PS = 0
010112  001401                          BEQ     .+4
010114  000000                          HLT                     ;PS IS WRONG

010116  022704  040000                  CMP     #40000,%4       ;IS QUOTIENT = 40000
010122  001401                          BEQ     .+4
010124  000000                          HLT                     ;QUOTIENT IS WRONG

010126  022705  177777                  CMP     #177777,%4+1    ;IS REMAINDER = 177777
010132  001401                          BEQ     .+4
010134  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 121  DIV  157777 100001 / #100000 = 40000  REM = 100001  PS = 0
                                ;*****************************************************************

010136  010701                          SCOPE                   ;TEST OF DIVIDE
010140  012704  157777                  MOV     #157777,%4      ;LOAD HIGH ORDER WITH 157777
010144  012705  100001                  MOV     #100001,%4+1    ;LOAD LOW ORDER WITH 100001
010150  071427  100000                  DIV     #100000,%4      ;DIVIDE BY #100000
010154  013767  177776  001440          MOV     @#PS,PSW        ;SAVE PS

010162  122767  000000  001432          CMPB    #0,PSW          ;IS PS = 0
010170  001401                          BEQ     .+4
010172  000000                          HLT                     ;PS IS WRONG

010174  022704  040000                  CMP     #40000,%4       ;IS QUOTIENT = 40000
010200  001401                          BEQ     .+4
010202  000000                          HLT                     ;QUOTIENT IS WRONG

010204  022705  100001                  CMP     #100001,%4+1    ;IS REMAINDER = 100001
010210  001401                          BEQ     .+4
010212  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 122  DIV  0 52525 / #52525 = 1  REM = 0  PS = 0
                                ;*****************************************************************

010214  010701                          SCOPE                   ;TEST OF DIVIDE
010216  012704  000000                  MOV     #0,%4           ;LOAD HIGH ORDER WITH 0
010222  012705  052525                  MOV     #52525,%4+1     ;LOAD LOW ORDER WITH 52525
010226  071427  052525                  DIV     #52525,%4       ;DIVIDE BY #52525
010232  013767  177776  001362          MOV     @#PS,PSW        ;SAVE PS

010240  122767  000000  001354          CMPB    #0,PSW          ;IS PS = 0
010246  001401                          BEQ     .+4
010250  000000                          HLT                     ;PS IS WRONG

010252  022704  000001                  CMP     #1,%4           ;IS QUOTIENT = 1
010256  001401                          BEQ     .+4
010260  000000                          HLT                     ;QUOTIENT IS WRONG

010262  022705  000000                  CMP     #0,%4+1         ;IS REMAINDER = 0
010266  001401                          BEQ     .+4
010270  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 123  DIV  0 52524 / #52525 = 0  REM = 52524  PS = 4
                                ;*****************************************************************

010272  010701                          SCOPE                   ;TEST OF DIVIDE
010274  012704  000000                  MOV     #0,%4           ;LOAD HIGH ORDER WITH 0
010300  012705  052524                  MOV     #52524,%4+1     ;LOAD LOW ORDER WITH 52524
010304  071427  052525                  DIV     #52525,%4       ;DIVIDE BY #52525
010310  013767  177776  001304          MOV     @#PS,PSW        ;SAVE PS

010316  122767  000004  001276          CMPB    #4,PSW          ;IS PS = 4
010324  001401                          BEQ     .+4
010326  000000                          HLT                     ;PS IS WRONG

010330  022704  000000                  CMP     #0,%4           ;IS QUOTIENT = 0
010334  001401                          BEQ     .+4
010336  000000                          HLT                     ;QUOTIENT IS WRONG

010340  022705  052524                  CMP     #52524,%4+1     ;IS REMAINDER = 52524
010344  001401                          BEQ     .+4
010346  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 124  DIV  0 0 / #125252 = 0  REM = 0  PS = 4
                                ;*****************************************************************

010350  010701                          SCOPE                   ;TEST OF DIVIDE
010352  012704  000000                  MOV     #0,%4           ;LOAD HIGH ORDER WITH 0
010356  012705  000000                  MOV     #0,%4+1         ;LOAD LOW ORDER WITH 0
010362  071427  125252                  DIV     #125252,%4      ;DIVIDE BY #125252
010366  013767  177776  001226          MOV     @#PS,PSW        ;SAVE PS

010374  122767  000004  001220          CMPB    #4,PSW          ;IS PS = 4
010402  001401                          BEQ     .+4
010404  000000                          HLT                     ;PS IS WRONG

010406  022704  000000                  CMP     #0,%4           ;IS QUOTIENT = 0
010412  001401                          BEQ     .+4
010414  000000                          HLT                     ;QUOTIENT IS WRONG

010416  022705  000000                  CMP     #0,%4+1         ;IS REMAINDER = 0
010422  001401                          BEQ     .+4
010424  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 125  DIV  177614 66560 / #40342 = 177070  REM = 0  PS = 10
                                ;*****************************************************************

010426  010701                          SCOPE                   ;TEST OF DIVIDE
010430  012704  177614                  MOV     #177614,%4      ;LOAD HIGH ORDER WITH 177614
010434  012705  066560                  MOV     #66560,%4+1     ;LOAD LOW ORDER WITH 66560
010440  071427  040342                  DIV     #40342,%4       ;DIVIDE BY #40342
010444  013767  177776  001150          MOV     @#PS,PSW        ;SAVE PS

010452  122767  000010  001142          CMPB    #10,PSW         ;IS PS = 10
010460  001401                          BEQ     .+4
010462  000000                          HLT                     ;PS IS WRONG

010464  022704  177070                  CMP     #177070,%4      ;IS QUOTIENT = 177070
010470  001401                          BEQ     .+4
010472  000000                          HLT                     ;QUOTIENT IS WRONG

010474  022705  000000                  CMP     #0,%4+1         ;IS REMAINDER = 0
010500  001401                          BEQ     .+4
010502  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 126  DIV  0 77777 / #0 = DUMMY  REM = DUMMY  PS = 3
                                ;*****************************************************************

010504  010701                          SCOPE                   ;TEST OF DIVIDE
010506  012704  000000                  MOV     #0,%4           ;LOAD HIGH ORDER WITH 0
010512  012705  077777                  MOV     #77777,%4+1     ;LOAD LOW ORDER WITH 77777
010516  071427  000000                  DIV     #0,%4           ;DIVIDE BY #0
010522  013767  177776  001072          MOV     @#PS,PSW        ;SAVE PS
010530  042767  000014  001064          BIC     #14,PSW

010536  122767  000003  001056          CMPB    #3,PSW          ;IS PS = 3
010544  001401                          BEQ     .+4
010546  000000                          HLT                     ;PS IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 127  DIV  77777 177777 / #2 = DUMMY  REM = DUMMY  PS = 2
                                        ;*****************************************************************

010550  010701                          SCOPE                   ;TEST OF DIVIDE
010552  012704  077777                  MOV     #77777,%4       ;LOAD HIGH ORDER WITH 77777
010556  012705  177777                  MOV     #177777,%4+1    ;LOAD LOW ORDER WITH 177777
010562  071427  000002                  DIV     #2,%4           ;DIVIDE BY #2
010566  013767  177776  001026          MOV     @#PS,PSW        ;SAVE PS
010574  042767  000014  001020          BIC     #14,PSW

010602  122767  000002  001012          CMPB    #2,PSW          ;IS PS = 2
010610  001401                          BEQ     .+4
010612  000000                          HLT                     ;PS IS WRONG


010614  012702  000002                  MOV     #2,%2
010620  012703  011626                  MOV     #S1,%3
010624  012704  011630                  MOV     #S2,%4

                                        ;*****************************************************************
                                        ;TEST 130  DIV  0 52525 / S1 = 25252  REM = 1  PS = 0
                                        ;*****************************************************************

010630  010701                          SCOPE                   ;TEST OF DIVIDE
010632  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
010636  012701  052525                  MOV     #52525,%0+1     ;LOAD LOW ORDER WITH 52525
010642  071067  000760                  DIV     S1,%0           ;DIVIDE BY S1
010646  013767  177776  000746          MOV     @#PS,PSW        ;SAVE PS

010654  122767  000000  000740          CMPB    #0,PSW          ;IS PS = 0
010662  001401                          BEQ     .+4
010664  000000                          HLT                     ;PS IS WRONG

010666  022700  025252                  CMP     #25252,%0       ;IS QUOTIENT = 25252
010672  001401                          BEQ     .+4
010674  000000                          HLT                     ;QUOTIENT IS WRONG

010676  022701  000001                  CMP     #1,%0+1         ;IS REMAINDER = 1
010702  001401                          BEQ     .+4
010704  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 131  DIV  0 52525 / @S2 = 25252  REM = 1  PS = 0
                                ;*****************************************************************

010706  010701                          SCOPE                   ;TEST OF DIVIDE
010710  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
010714  012701  052525                  MOV     #52525,%0+1     ;LOAD LOW ORDER WITH 52525
010720  071077  000734                  DIV     @S2,%0          ;DIVIDE BY @S2
010724  013767  177776  000670          MOV     @#PS,PSW        ;SAVE PS

010732  122767  000000  000662          CMPB    #0,PSW          ;IS PS = 0
010740  001401                          BEQ     .+4
010742  000000                          HLT                     ;PS IS WRONG

010744  022700  025252                  CMP     #25252,%0       ;IS QUOTIENT = 25252
010750  001401                          BEQ     .+4
010752  000000                          HLT                     ;QUOTIENT IS WRONG

010754  022701  000001                  CMP     #1,%0+1         ;IS REMAINDER = 1
010760  001401                          BEQ     .+4
010762  000000                          HLT                     ;REMAINDER IS WRONG

                                ;*****************************************************************
                                ;TEST 132  DIV  0 52525 / @#S1 = 25252  REM = 1  PS = 0
                                ;*****************************************************************

010764  010701                          SCOPE                   ;TEST OF DIVIDE
010766  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
010772  012701  052525                  MOV     #52525,%0+1     ;LOAD LOW ORDER WITH 52525
010776  071037  011626                  DIV     @#S1,%0         ;DIVIDE BY @#S1
011002  013767  177776  000612          MOV     @#PS,PSW        ;SAVE PS

011010  122767  000000  000604          CMPB    #0,PSW          ;IS PS = 0
011016  001401                          BEQ     .+4
011020  000000                          HLT                     ;PS IS WRONG

011022  022700  025252                  CMP     #25252,%0       ;IS QUOTIENT = 25252
011026  001401                          BEQ     .+4
011030  000000                          HLT                     ;QUOTIENT IS WRONG

011032  022701  000001                  CMP     #1,%0+1         ;IS REMAINDER = 1
011036  001401                          BEQ     .+4
011040  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 133  DIV  0 52525 / %2 = 25252  REM = 1  PS = 0
                                ;*****************************************************************

011042  010701                          SCOPE                   ;TEST OF DIVIDE
011044  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
011050  012701  052525                  MOV     #52525,%0+1     ;LOAD LOW ORDER WITH 52525
011054  071002                          DIV     %2,%0           ;DIVIDE BY %2
011056  013767  177776  000536          MOV     @#PS,PSW        ;SAVE PS

011064  122767  000000  000530          CMPB    #0,PSW          ;IS PS = 0
011072  001401                          BEQ     .+4
011074  000000                          HLT                     ;PS IS WRONG

011076  022700  025252                  CMP     #25252,%0       ;IS QUOTIENT = 25252
011102  001401                          BEQ     .+4
011104  000000                          HLT                     ;QUOTIENT IS WRONG

011106  022701  000001                  CMP     #1,%0+1         ;IS REMAINDER = 1
011112  001401                          BEQ     .+4
011114  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 134  DIV  0 52525 / (3)+ = 25252  REM = 1  PS = 0
                                ;*****************************************************************

011116  010701                          SCOPE                   ;TEST OF DIVIDE
011120  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
011124  012701  052525                  MOV     #52525,%0+1     ;LOAD LOW ORDER WITH 52525
011130  071023                          DIV     (3)+,%0         ;DIVIDE BY (3)+
011132  013767  177776  000462          MOV     @#PS,PSW        ;SAVE PS

011140  122767  000000  000454          CMPB    #0,PSW          ;IS PS = 0
011146  001401                          BEQ     .+4
011150  000000                          HLT                     ;PS IS WRONG

011152  022700  025252                  CMP     #25252,%0       ;IS QUOTIENT = 25252
011156  001401                          BEQ     .+4
011160  000000                          HLT                     ;QUOTIENT IS WRONG

011162  022701  000001                  CMP     #1,%0+1         ;IS REMAINDER = 1
011166  001401                          BEQ     .+4
011170  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 135  DIV  0 52525 / -(3) = 25252  REM = 1  PS = 0
                                ;*****************************************************************

011172  010701                          SCOPE                   ;TEST OF DIVIDE
011174  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
011200  012701  052525                  MOV     #52525,%0+1     ;LOAD LOW ORDER WITH 52525
011204  071043                          DIV     -(3),%0         ;DIVIDE BY -(3)
011206  013767  177776  000406          MOV     @#PS,PSW        ;SAVE PS

011214  122767  000000  000400          CMPB    #0,PSW          ;IS PS = 0
011222  001401                          BEQ     .+4
011224  000000                          HLT                     ;PS IS WRONG

011226  022700  025252                  CMP     #25252,%0       ;IS QUOTIENT = 25252
011232  001401                          BEQ     .+4
011234  000000                          HLT                     ;QUOTIENT IS WRONG

011236  022701  000001                  CMP     #1,%0+1         ;IS REMAINDER = 1
011242  001401                          BEQ     .+4
011244  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 136  DIV  0 52525 / 2(4) = 25252  REM = 1  PS = 0
                                ;*****************************************************************

011246  010701                          SCOPE                   ;TEST OF DIVIDE
011250  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
011254  012701  052525                  MOV     #52525,%0+1     ;LOAD LOW ORDER WITH 52525
011260  071064  000002                  DIV     2(4),%0         ;DIVIDE BY 2(4)
011264  013767  177776  000330          MOV     @#PS,PSW        ;SAVE PS

011272  122767  000000  000322          CMPB    #0,PSW          ;IS PS = 0
011300  001401                          BEQ     .+4
011302  000000                          HLT                     ;PS IS WRONG

011304  022700  025252                  CMP     #25252,%0       ;IS QUOTIENT = 25252
011310  001401                          BEQ     .+4
011312  000000                          HLT                     ;QUOTIENT IS WRONG

011314  022701  000001                  CMP     #1,%0+1         ;IS REMAINDER = 1
011320  001401                          BEQ     .+4
011322  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                ;*****************************************************************
                                ;TEST 137  DIV  0 52525 / @(4) = 25252  REM = 1  PS = 0
                                ;*****************************************************************

011324  010701                          SCOPE                   ;TEST OF DIVIDE
011326  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
011332  012701  052525                  MOV     #52525,%0+1     ;LOAD LOW ORDER WITH 52525
011336  071074  000000                  DIV     @(4),%0         ;DIVIDE BY @(4)
011342  013767  177776  000252          MOV     @#PS,PSW        ;SAVE PS

011350  122767  000000  000244          CMPB    #0,PSW          ;IS PS = 0
011356  001401                          BEQ     .+4
011360  000000                          HLT                     ;PS IS WRONG

011362  022700  025252                  CMP     #25252,%0       ;IS QUOTIENT = 25252
011366  001401                          BEQ     .+4
011370  000000                          HLT                     ;QUOTIENT IS WRONG

011372  022701  000001                  CMP     #1,%0+1         ;IS REMAINDER = 1
011376  001401                          BEQ     .+4
011400  000000                          HLT                     ;REMAINDER IS WRONG


                                ;*****************************************************************
                                ;TEST 140  DIV  0 52525 / @(4)+ = 25252  REM = 1  PS = 0
                                ;*****************************************************************

011402  010701                          SCOPE                   ;TEST OF DIVIDE
011404  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
011410  012701  052525                  MOV     #52525,%0+1     ;LOAD LOW ORDER WITH 52525
011414  071034                          DIV     @(4)+,%0        ;DIVIDE BY @(4)+
011416  013767  177776  000176          MOV     @#PS,PSW        ;SAVE PS

011424  122767  000000  000170          CMPB    #0,PSW          ;IS PS = 0
011432  001401                          BEQ     .+4
011434  000000                          HLT                     ;PS IS WRONG

011436  022700  025252                  CMP     #25252,%0       ;IS QUOTIENT = 25252
011442  001401                          BEQ     .+4
011444  000000                          HLT                     ;QUOTIENT IS WRONG

011446  022701  000001                  CMP     #1,%0+1         ;IS REMAINDER = 1
011452  001401                          BEQ     .+4
011454  000000                          HLT                     ;REMAINDER IS WRONG
```

```
                                        ;*****************************************************************
                                        ;TEST 141  DIV  0 52525 / @-(4) = 25252  REM = 1  PS = 0
                                        ;*****************************************************************

011456  010701                          SCOPE                   ;TEST OF DIVIDE
011460  012700  000000                  MOV     #0,%0           ;LOAD HIGH ORDER WITH 0
011464  012701  052525                  MOV     #52525,%0+1     ;LOAD LOW ORDER WITH 52525
011470  071054                          DIV     @-(4),%0        ;DIVIDE BY @-(4)
011472  013767  177776  000122          MOV     @#PS,PSW        ;SAVE PS

011500  122767  000000  000114          CMPB    #0,PSW          ;IS PS = 0
011506  001401                          BEQ     .+4
011510  000000                          HLT                     ;PS IS WRONG

011512  022700  025252                  CMP     #25252,%0       ;IS QUOTIENT = 25252
011516  001401                          BEQ     .+4
011520  000000                          HLT                     ;QUOTIENT IS WRONG

011522  022701  000001                  CMP     #1,%0+1         ;IS REMAINDER = 1
011526  001401                          BEQ     .+4
011530  000000                          HLT                     ;REMAINDER IS WRONG



011532  005267  167242                  INC     ICNT
011536  016737  167236  177570          MOV     ICNT,@#DISPLAY
011544  022767  020000  167226          CMP     #20000,ICNT
011552  001402                          BEQ     .+6
011554  000167  167222                  JMP     BEG
011560  005067  167214                  CLR     ICNT
011564  105737  177564                  TSTB    @#177564
011570  100375                          BPL     .-4
011572  112737  000007  177566          MOVB    #7,@#177566
011600  013700  000042                  MOV     @#42,%0         ;GET MONITOR RETURN ADDRESS
011604  001404                          BEQ     1$              ;SKIP IF NONE
011606  004710                          JSR     7,(0)           ;GO BACK TO THE MONITOR
011610  000240                          NOP
011612  000240                          NOP
011614  000240                          NOP
011616  000137  000200          1$:     JMP     @#200           ;RESTART THE PROGRAM

011622  000000                  PSW:    0
011624  177776                  S0:     -2
011626  000002                  S1:     2
011630  011626                  S2:     S1
011632  000002                  S3:     2

        000001                  .END
```

```
BEG     001002          DISPLA = 177570          DUMMY  = 000000          HLT    = 000000
ICNT    001000          M      = 000006          N      = 000142          PC     =%000007
PS      = 177776        PSW      011622          SCOPE  = 010701          SP     =%000006
SWR     = 177570        S0       011624          S1       011626          S2       011630
S3       011632         .      = 011634
```

ERRORS DETECTED: 0

IDENTIFICATION

PRODUCT CODE:	MAINDEC-11-DCQKA-A-D
PRODUCT NAME:	MUL - DIV RANDOM EXERCISER
DATE CREATED:	1-APR-72
MAINTAINER:	DIAGNOSTIC GROUP
AUTHOR:	BOB BRAIN

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MAYNARD, MASS.

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Description

1. Abstract

This test is to be used as an exerciser for the PDP11/45 MUL and DIV instructions. It tests the divide and multiply with random numbers.

2. Requirements

2.1 Equipment

PDP11/45 standard computer

2.2 Storage

Program Storage - the routines use memory 0 - 17776

2.3 Preliminary programs

MAINDEC-11-DCKBI and DCKBJ

3. Loading procedure

Use standard procedure for ABS tapes.

4. Starting Procedure

4.1 Control switch settings

See 5.1.1 (all down for worst case testing)

4.2 Starting address

The program should always be started at 200.

4.3 Program and/or operator action

1) Load program into memory using ABS loader.
2) Load address 200.
3) Set switches (see sec 5.1.1) All down for worst case
4) Press start.
5) The program will loop and bell will ring once every pass
6) A minimum of two passes should always be run.
7) The display on the 11/45 will show the pass count. Set the data display switch to the DISPLAY position.

5. Operating procedure

5.1 Operational switch settings

At SA 200 , all switches down will test all functions of MUL and DIV and print out on errors and continue in test. (bell will ring at completion of 512 passes)

5.1.1 Switch settings are:

```
SW15 = 1 ,,,,, HALT ON ERROR
SW14 = 1 ,,,,, SCOPE LOOP
SW13 = 1 ,,,,, INHIBIT PRINTOUT
SW12 = 1 ,,,,, INHIBIT TRACE TRAPPING
SW11 = 1 ,,,,, INHIBIT ITERATION LOOP
SW10 = 1 ,,,,, BELL ON ERROR
       0 ,,,,, BELL ON 512 PASSES
```

5.2 Subroutine Abstracts

5.2.1 SCOPE

This subroutine call is placed between each subtest in the instruction section. It records the starting address of each subtest as it is being entered in location "LAD". If a scope loop is requested, the current subtest will be looped upon. SW<11> on a 1 inhibits iteration of subtests. The contents of LAD may be used to determine the last subtest successfully completed.

5.2.2 HLT

This routine prints out an error message (See 6.1.) To inhibit typeouts, put SW<13> on a 1.

5.2.3 TRTRAP

If SW<12> is on a 0, the T bit will be set on alternate passes. When set, it causes a trap after each instruction. The first instruction executed upon trapping is an "RTT" which returns to the interrupted sequence of instructions. This sequence is continued until the end of the program is reached.

5.2.4 TRAPCATCHER

A ",+2" = "HALT" sequence is repeated from 0 - 776 to catch any unexpected traps. Thus any unexpected traps or interupts will HALT at the vector + 2.

6. Errors

Loading and starting at 200 with all switches down is worst case testing. When an error is detected and it is necessary to scope on it, place SW15 up to halt on error, Hit continue with SW14 up to loop on test, and SW13 up to delete printouts.

6.1 Error printout

The format is as follows:

```
DIV ERROR:   040000 000000 / 100000

SOFTWARE  000000  100000  PS=22
HARDWARE  000000  100000  PS=122

ERRORS OCCURED 75 TIMES OUT OF 400
```

The line starting with 'DIV ERROR' is the operation being performed when the failure was detected. The 'SOFTWARE' line shows the calculated result and the 'HARDWARE' line is the result by the hardware. The last line reflects the number of errors out of the number of tries. This line will only be typed if the iterations are on.

6.2 Error recovery

Restart at 200

7. Restrictions

None

8. Miscellaneous

8.1 Execution time

A bell will ring within 1 minute with all switches down.

8.2 Stack Pointer

Stack is initally set to 500

8.3 Power Fail

To use, start the test as usual and power down then up at any time. There should be no error typeouts.

9. Program Description

This program is an exercisor of the multiply and divide instructions. It first generates 2 random numbers and multiplies them together. It saves this answer and divides it by the multiplier and the multiplican saving both answers. The original numbers are hardware multiplied both ways and compaired to the original answer. The two divisions are performed and compaired to the original software answers. One more random number is generated and this number is divided into the original two numbers and the answer checked against the hardware answers. Each hardware multiply and divide is done 256 times. If SW11 is up, they will only be done once. SW14 will cause the test that you are in to be looped upon.

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```
                                ;TITLE  MAINDEC-11-DCQKA-A  MUL - DIV RANDOM EXERCISER
                                ;COPYRIGHT 1972, DIGITAL EQUIPMENT CORP., MAYNARD,MASS.
                                ;PROGRAM BY BOB BRAIN
                                ;ENABL  ABS
                                ;SWITCH SETTINGS
                                ;
                                ;       SWITCH                  USE
                                ;       ------          ----------------------
                                ;         10            0 = BELL ON PASS COMPLETE
                                ;                       1 = BELL ON ERROR
                                ;         11            INHIBIT ITERATIONS
                                ;         12            INHIBIT TRACE TRAP
                                ;         13            INHIBIT ERROR TYPEOUTS
                                ;         14            LOOP ON TEST
                                ;         15            HALT ON ERROR

        000000                  .=      0                       ;TRAP CATCHER AT 0 - 776
        000014                  .=14
000014  003626                          .TRT
000016  000000                          0
000020  003676                          .IOT
000022  000340                          340
        000030                  .=30
000030  002174                          .EMT
000032  000000                          0
000034  002360                          .TRP
000036  000000                          0
        000200                  .=200
000200  000167  000576                  JMP     BEGIN

        000004                  TYPE=   IOT
        040000                  SW14=   40000
        020000                  SW13=   20000
        010000                  SW12=   10000
        004000                  SW11=    4000
        002000                  SW10=    2000
        000001                  N=      1
        177570                  SWR=    177570
        177570                  DISPLAY=SWR
        104000                  SCOPE=  EMT
        104400                  HLT=    TRAP
        000000                  R0=     %0
        000000                  .AC=    R0
        000001                  .MQ=    %1
        000002                  R2=     %2
        000003                  TTY=    %3
        000004                  R4=     %4
        000005                  R5=     %5
        000006                  SP=     %6
        000007                  PC=     %7
        000007                  BELL=   7
```

```
                                                .=      1000
                                        ICNT:   0
001000  000000                  BEGIN:  MOV     #500,SP         ;SET PUSH DOWN LIST POINTER
001002  012706  000500                  TST     @#42            ;42 CLEAR
001006  005737  000042                  BEQ     1$              ;YES!
001012  001403                          MOV     #100,@#177560   ;IE THE TTY
001014  012737  000100  177560          CLR     ERRORS          ;ERROR COUNT
001022  005067  002622          1$:     MOV     #1,CNT
001026  012767  000001  002604          MOV     #123456,LONUM   ;INITALIZE LONUM FOR RANDOM
001034  012767  123456  002572          MOV     #176543,HINUM   ;INITALIZE HINUM FOR RANDOM
001042  012767  176543  002566
001050  012704  003654          GO:     MOV     #AREA,R4        ;SET POINTER TO ANSWER AREA
001054  004767  002326                  JSR     PC,RANDOM       ;GET RANDOM NUMBERS
001060  016701  002550                  MOV     LONUM,,MQ       ;LOAD MULTIPLIER (SOFTWARE)
001064  016702  002546                  MOV     HINUM,R2        ;LOAD MULTIPLICAN (SOFTWARE)
001070  004767  003540                  JSR     PC,MUL1         ;MULTIPLY
001074  010124                          MOV     ,MQ,(4)+        ;SAVE MQ
001076  010024                          MOV     ,AC,(4)+        ;SAVE AC
001100  016724  003024                  MOV     SR1,(4)+        ;SAVE SR
001104  016702  002524                  MOV     LONUM,R2        ;LOAD DIVISOR
001110  004767  003020                  JSR     PC,DIV1         ;DIVIDE BY MULTIPLIER (SOFTWARE)
001114  010024                          MOV     ,AC,(4)+        ;SAVE AC
001116  010124                          MOV     ,MQ,(4)+        ;SAVE MQ
001120  016724  003004                  MOV     SR1,(4)+        ;SAVE SR
001124  005767  002504                  TST     LONUM
001130  001411                          BEQ     OK1
001132  005701                          TST     ,MQ
001134  001402                          BEQ     ,+6
001136  004767  002370                  JSR     PC,BAD
001142  020067  002470                  CMP     ,AC,HINUM
001146  001402                          BEQ     ,+6
001150  004767  002356                  JSR     PC,BAD
001154  012704  003654          OK1:    MOV     #AREA,R4        ;RESET POINTER
001160  012401                          MOV     (4)+,,MQ        ;RESTORE MQ
001162  012400                          MOV     (4)+,,AC        ;RESTORE AC
001164  062704  000010                  ADD     #10,R4          ;INCREMENT POINTER
001170  016702  002442                  MOV     HINUM,R2        ;LOAD DIVISOR
001174  004767  002734                  JSR     PC,DIV1         ;DIVIDE BY MULTIPLICAN (SOFTWARE)
001200  010024                          MOV     ,AC,(4)+        ;SAVE AC
001202  010124                          MOV     ,MQ,(4)+        ;SAVE MQ
001204  016714  002720                  MOV     SR1,(4)         ;SAVE SR
001210  005767  002422                  TST     HINUM
001214  001411                          BEQ     ITER
001216  005701                          TST     ,MQ
001220  001402                          BEQ     ,+6
001222  004767  002304                  JSR     PC,BAD
001226  020067  002402                  CMP     ,AC,LONUM
001232  001402                          BEQ     ,+6
001234  004767  002272                  JSR     PC,BAD
001240  005067  177534          ITER:   CLR     ICNT            ;SET UP COUNT
```

```
                                        ;*****************************************************************
                                        ;TEST 1         LONUM X HINUM
                                        ;*****************************************************************
                                                SCOPE
001244  104000                                  MOV     #AREA,R4        ;RESTORE POINTER
001246  012704  003654                          MOV     (4)+,,MQX       ;RESTORE MQ
001252  012467  003704                          MOV     (4)+,,ACX       ;RESTORE AC
001256  012467  003676                          MOV     (4),SR1         ;RESTORE SR1
001262  011467  002642
                                                MOV     LONUM,,AC       ;LOAD MULTIPLIER (HARDWARE)
001266  016700  002342                          MUL     HINUM,,AC       ;LOAD MULTIPLICAN AND MULTIPLY
001272  070067  002340                          JSR     PC,FLOW
001276  004767  000624                          NOP
001302  000240                                  CMP     ,ACX,,AC        ;CHECK HIGH ORDER PRODUCT
001304  026700  003650                          BEQ     ,+4             ;SKIP IF OK
001310  001401                                  HLT
001312  104400                                  CMP     ,MQX,,MQ        ;CHECK LOW ORDER PRODUCT
001314  026701  003642                          BEQ     ,+4             ;SKIP IF OK
001320  001401                                  HLT
001322  104400                                  CMPB    SR1,TEMP        ;CHECK STATUS REGISTER
001324  126767  002600  000636                  BEQ     ,+4             ;SKIP IF GOOD
001332  001401                                  HLT
001334  104400
                                        ;*****************************************************************
                                        ;TEST 2         HINUM X LONUM
                                        ;*****************************************************************
                                                SCOPE
001336  104000                                  MOV     #AREA,R4        ;RESTORE POINTER
001340  012704  003654                          MOV     (4)+,,MQX       ;RESTORE MQ
001344  012467  003612                          MOV     (4)+,,ACX       ;RESTORE AC
001350  012467  003604                          MOV     (4),SR1         ;RESTORE SR1
001354  011467  002550
                                                MOV     HINUM,,AC       ;LOAD MULTIPLIER (HARDWARE)
001360  016700  002252                          MUL     LONUM,,AC       ;MULTIPLY
001364  070067  002244                          JSR     PC,FLOW
001370  004767  000532                          NOP
001374  000240                                  CMP     ,ACX,,AC        ;CHECK HIGH ORDER PRODUCT
001376  026700  003556                          BEQ     ,+4             ;SKIP IF OK
001402  001401                                  HLT+2
001404  104402                                  CMP     ,MQX,,MQ        ;CHECK LOW ORDER PRODUCT
001406  026701  003550                          BEQ     ,+4             ;SKIP IF OK
001412  001401                                  HLT+2
001414  104402                                  CMPB    SR1,TEMP        ;CHECK STATUS REGISTER
001416  126767  002506  000544                  BEQ     ,+4             ;SKIP IF GOOD
001424  001401                                  HLT+2
001426  104402
```

```
                                        ;*****************************************************************
                                        ;TEST 3         RESULT / LONUM
                                        ;*****************************************************************
001430  104000                          SCOPE
001432  012704  003654                  MOV     #AREA,R4        ;RESTORE POINTER
001436  012401                          MOV     (4)+,,MQ        ;RESTORE MQ
001440  012400                          MOV     (4)+,,AC        ;RESTORE AC
001442  005724                          TST     (4)+            ;INTREMENT POINTER
001444  012467  003510                  MOV     (4)+,,ACX       ;RESTORE AC
001450  012467  003506                  MOV     (4)+,,MQX       ;RESTORE MQ
001454  011467  002450                  MOV     (4),SR1         ;RESTORE SR1
001460  071067  002150                  DIV     LONUM,,AC       ;DIVIDE BY MULTIPLIER (HARDWARE)
001464  004767  000436                  JSR     PC,FLOW
001470  000410                          BR      ,SR1
001472  026700  003462                  CMP     ,ACX,,AC        ;CHECK REMAINDER
001476  001401                          BEQ     ,+4             ;SKIP IF OK
001500  104401                          HLT+1
001502  026701  003454                  CMP     ,MQX,,MQ        ;CHECK QUOTENT
001506  001401                          BEQ     ,+4             ;SKIP IF OK
001510  104401                          HLT+1
001512  126767  002412  000450  ,SR1:   CMPB    SR1,TEMP        ;CHECK STATUS REGISTER
001520  001401                          BEQ     ,+4             ;SKIP IF OK
001522  104401                          HLT+1

                                        ;*****************************************************************
                                        ;TEST 4         RESULT / HINUM
                                        ;*****************************************************************
001524  104000                          SCOPE
001526  012704  003654                  MOV     #AREA,R4        ;RESTORE POINTER
001532  012401                          MOV     (4)+,,MQ        ;RESTORE MQ
001534  012400                          MOV     (4)+,,AC        ;RESTORE AC
001536  062704  000010                  ADD     #10,R4          ;INCREMENT POINTER
001542  012467  003412                  MOV     (4)+,,ACX       ;RESTORE AC
001546  012467  003410                  MOV     (4)+,,MQX       ;RESTORE MQ
001552  011467  002352                  MOV     (4),SR1         ;RESTORE SR1
001556  071067  002054                  DIV     HINUM,,AC       ;DIVIDE BY MULTIPLICAN (HARDWARE)
001562  004767  000340                  JSR     PC,FLOW
001566  000410                          BR      ,SR2
001570  026700  003364                  CMP     ,ACX,,AC        ;CHECK REMAINDER
001574  001401                          BEQ     ,+4             ;SKIP IF OK
001576  104403                          HLT+3
001600  026701  003356                  CMP     ,MQX,,MQ        ;CHECK QUOTENT
001604  001401                          BEQ     ,+4             ;SKIP IF OK
001606  104403                          HLT+3
001610  126767  002314  000352  ,SR2:   CMPB    SR1,TEMP        ;CHECK STATUS REGISTER
001616  001401                          BEQ     ,+4             ;SKIP IF OK
001620  104403                          HLT+3
```

```
                                                SCOPE                   ;CALCULATE NEW RANDOM DIVISOR
001622  104000                                  MOV     LONUM,AREA      ;GET MQ
001624  016767  002004  002022                  MOV     HINUM,AREA+2    ;GET AC
001632  016767  002000  002016                  MOV     LONUM,,MQ       ;LOAD MQ (SOFTWARE)
001640  016701  001772                          MOV     HINUM,,AC       ;LOAD AC (SOFTWARE)
001644  016700  001766                          JSR     PC,RANDOM       ;GET 1 RANDOM NUMBER
001650  004767  001532                          MOV     LONUM,AREA+4    ;GET DIVISOR
001654  016767  001754  001776                  MOV     LONUM,R2        ;LOAD THE DIVISOR
001662  016702  001746                          DIV     PC,DIVI         ;DIVIDE
001666  004767  002242                          MOV     ,AC,,ACX
001672  010067  003262                          MOV     ,MQ,,MQX
001676  010167  003260                          MOV     #LOCX,LAD       ;FUDGE LAD
001702  012767  001710  001734
                                        ;*****************************************************************
                                        ;TEST 5         LONUM HINUM / NEW LONUM
                                        ;*****************************************************************
001710  016701  001740                  LOCX:   MOV     AREA,,MQ        ;RESTORE MQ
001714  016700  001736                          MOV     AREA+2,,AC      ;RESTORE AC
001720  071067  001734                          DIV     AREA+4,,AC      ;DIVIDE
001724  004767  000176                          JSR     PC,FLOW
001730  000410                                  BR      ,SR3
001732  026700  003222                          CMP     ,ACX,,AC        ;CHECK AC
001736  001401                                  BEQ     ,+4
001740  104407                                  HLT+7                   ;REMAINDER WRONG
001742  026701  003214                          CMP     ,MQX,,MQ        ;CHECK QUOTIENT
001746  001401                                  BEQ     ,+4
001750  104407                                  HLT+7                   ;QUOTIENT WRONG
001752  126767  002152  000210          ,SR3:   CMPB    SR1,TEMP        ;CHECK STATUS
001760  001401                                  BEQ     ,+4
001762  104407                                  HLT+7
```

```
  233  001764  104000                          SCOPE
  234
  235  001766  005046                          CLR     -(6)            ;CLEAR TRACE TRAP
  236  001770  032767  010000  175572          BIT     #SW12,SWR       ;RUN WITH TRT?  *SW12*
  237  001776  001010                          BNE     2$
  238  002000  005167  000166                  COM     TRPB
  239  002004  100005                          BPL     2$
  240  002006  052716  000020                  BIS     #20,(6)         ;SET TRACE TRAP
  241  002012  012746  001050                  MOV     #GO,-(6)        ;JUMP TO START OF TEST
  242  002016  000006                          RTT
  243  002020  012746  002026          2$:     MOV     #RTIX,-(6)      ;JUMP TO START OF TEST
  244  002024  000006                          RTT
  245  002026  062767  000001  001604  RTIX:   ADD     #1,CNT          ;COUNT NUMBER OF PASSES
  246  002034  016737  001600  177570          MOV     CNT,@#DISPLAY
  247  002042  032767  000177  001570          BIT     #177,CNT        ;CHECK FOR MULTIPLES OF 200
  248  002050  001402                          BEQ     .+6
  249  002052  000167  176772          DOIT:   JMP     GO              ;RERUN
  250  002056  032767  002000  175504          BIT     #2000,SWR
  251  002064  001372                          BNE     DOIT
  252  002066  005067  001546                  CLR     CNT
  253  002072  112767  000007  001546          MOVB    #BELL,,TYPE     ;TYPE A BELL
  254  002100  000004  003646                  TYPE    ,,TYPE
  255  002104  013700  000042                  MOV     @#42,R0         ;GET MONITOR ADDRESS (IF ANY)
  256  002110  001404                          BEQ     1$
  257  002112  004710                          JSR     7,(0)           ;CALL THE MONITOR
  258  002114  000240                          NOP
  259  002116  000240                          NOP
  260  002120  000240                          NOP
  261  002122  000167  176722          1$:     JMP     GO              ;RERUN
  262
  263
  264  002126  113767  177776  000034  FLOW:   MOVB    @#177776,TEMP   ;GET THE PS BITS
  265  002134  042767  177760  000026          BIC     #177760,TEMP
  266  002142  032767  000002  000020          BIT     #2,TEMP
  267  002150  001003                          BNE     EQZ
  268  002152  062716  000002                  ADD     #2,(6)
  269  002156  000207                          RTS     PC
  270  002160  042767  000014  000002  EQZ:    BIC     #14,TEMP
  271  002166  000207                          RTS     PC
  272
  273  002170  000000                  TEMP:   0
  274  002172  000000                  TRPB:   0
```

```
  275  002174  032737  004000  177570  ,EMT:   BIT     #SW11,@#SWR     ;KILL ITERATIONS
  276  002202  001053                          BNE     SAVLAD
  277  002204  005767  176570                  TST     ICNT
  278  002210  001445                          BEQ     ICINT           ;BRANCH IF FIRST
  279  002212  032737  040000  177570          BIT     #SW14,@#SWR     ;KILL ITERATIONS
  280  002220  001047                          BNE     KIT             ;YES
  281  002222  026767  001424  176550          CMP     TIMES,ICNT      ;DONE?
  282  002230  003043                          BGT     KIT             ;BRANCH IF NOT
  283  002232  005767  001424                  TST     ERCNT           ;ANY ERRORS?
  284  002236  001432                          BEQ     ICINT
  285  002240  032737  020000  177570          BIT     #SW13,@#SWR     ;INHIBIT TYPEOUTS?
  286  002246  001024                          BNE     NOTY
  287  002250  000004  003170                  TYPE    ,ER6
  288  002254  016703  001362                  MOV     ERCNT,TTY       ;TYPE ERCNT IN OCTAL
  289  002260  004767  001510                  JSR     PC,PRINTS       ;AND SUPRESS LEADING ZERO'S
  290  002264  000004  003214                  TYPE    ,ER7
  291  002270  016703  176504                  MOV     ICNT,TTY        ;TYPE ICNT IN OCTAL
  292  002274  004767  001474                  JSR     PC,PRINTS       ;AND SUPRESS LEADING ZERO'S
  293  002300  000004  002304                  TYPE    ,,+2            ;,ASCIZ <15><12>
  294  002310  005737  177570                  TST     @#SWR           ;HALT ON ERROR  *SW15*
  295  002314  100001                          BPL     ,+4
  296  002316  000000                          HALT
  297  002320  005067  001316          NOTY:   CLR     ERCNT
  298  002324  012767  000001  176446  ICINT:  MOV     #1,ICNT         ;FIRST ITERATION
  299  002332  011667  001306          SAVLAD: MOV     (6),LAD         ;SAVE LOOP ADDRESS
  300  002336  000002                          RTI                     ;RETURN
  301
  302  002340  005267  176434          KIT:    INC     ICNT
  303  002344  005767  001274          OVR:    TST     LAD             ;FIRST ONE?
  304  002350  001770                          BEQ     SAVLAD
  305  002352  016716  001266                  MOV     LAD,(6)         ;FUDGE RETURN ADDRESS
  306  002356  000002                          RTI                     ;FIXES PS
```

```
                                                ;
                                                ;
                                                ;
```

```
346  002576  000004  003046          DIVP1:  TYPE    ,ER1D
347  002602  016703  001050                  MOV     AREA+2,TTY      ;TYPE AREA+2 IN OCTAL
348  002606  004767  001152                  JSR     PC,PRINTR       ;TYPE LEADING ZERO'S
349  002612  112767  000040  001026          MOVB    #40,,TYPE       ;TYPE A 40
350  002620  000004  003646                  TYPE    ,,TYPE
351  002624  016703  001024                  MOV     AREA,TTY        ;TYPE AREA IN OCTAL
352  002630  004767  001130                  JSR     PC,PRINTR       ;TYPE LEADING ZERO'S
353  002634  000004  003114                  TYPE    ,ER2A
354  002640  032776  000004  000000          BIT     #4,@(6)
355  002646  001405                          BEQ     DIVZ
356  002650  016703  001004                  MOV     AREA+4,TTY      ;TYPE AREA+4 IN OCTAL
357  002654  004767  001104                  JSR     PC,PRINTR       ;TYPE LEADING ZERO'S
358  002660  000415                          BR      PSOFT
359  002662  032776  000002  000000  DIVZ:   BIT     #2,@(6)         ;TEST FOR WHICH DIVIDE
360  002670  001005                          BNE     SEC1
361  002672  016703  000736                  MOV     LONUM,TTY       ;TYPE LONUM IN OCTAL
362  002676  004767  001062                  JSR     PC,PRINTR       ;TYPE LEADING ZERO'S
363  002702  000404                          BR      PSOFT
364  002704                          SEC1:
365  002704  016703  000726                  MOV     HINUM,TTY       ;TYPE HINUM IN OCTAL
366  002710  004767  001050                  JSR     PC,PRINTR       ;TYPE LEADING ZERO'S
367  002714  000004  003120          PSOFT:  TYPE    ,ER3
368  002720  016703  002234                  MOV     ,ACX,TTY        ;TYPE ,ACX IN OCTAL
369  002724  004767  001034                  JSR     PC,PRINTR       ;TYPE LEADING ZERO'S
370  002730  000004  003153                  TYPE    ,ER4
371  002734  016703  002222                  MOV     ,MQX,TTY        ;TYPE ,MQX IN OCTAL
372  002740  004767  001020                  JSR     PC,PRINTR       ;TYPE LEADING ZERO'S
373  002744  000004  003160                  TYPE    ,ER5
374  002750  016703  001154                  MOV     SR1,TTY         ;TYPE SR1 IN OCTAL
375  002754  004767  001014                  JSR     PC,PRINTS       ;AND SUPRESS LEADING ZERO'S
376  002760  000004  003140                  TYPE    ,ER3B
377  002764  000004  003133                  TYPE    ,ER3A
378  002770  010003                          MOV     ,AC,TTY         ;TYPE ,AC IN OCTAL
379  002772  004767  000766                  JSR     PC,PRINTR       ;TYPE LEADING ZERO'S
380  002776  000004  003153                  TYPE    ,ER4
381  003002  010103                          MOV     ,MQ,TTY         ;TYPE ,MQ IN OCTAL
382  003004  004767  000754                  JSR     PC,PRINTR       ;TYPE LEADING ZERO'S
383  003010  000004  003160                  TYPE    ,ER5
384  003014  016703  177150                  MOV     TEMP,TTY        ;TYPE TEMP IN OCTAL
385  003020  004767  000750                  JSR     PC,PRINTS       ;AND SUPRESS LEADING ZERO'S
386  003024  005726                          TST     (6)+            ;RESTORE POINTER
387  003026  021667  000010          NOHEAD: CMP     (6),HLTAD       ;CHECK FOR SAME HLT
388  003032  001002                          BNE     .+6
389  003034  005267  000602                  INC     ERCNT
390  003040  000002                          RTI
```

```
                                                HLTADI  0
                                                SERI    0
                                        053111  ERIDI   ,ASCIZ  <15><12><12>"DIV ERROR!   "
                                        051117
                                          000
                                        052515  ERIMI   ,ASCIZ  <15><12><12>"MUL ERROR!   "
                                        047522
                                        000040
                                                ER2I    ,ASCIZ  " X "
                                                ER2AI   ,ASCIZ  " / "
                                        043117  ER3I    ,ASCII  <15><12><12>"SOFTWARE"
                                          105
                                        000040  ER3AI   ,ASCIZ  "    "
                                        042122  ER3BI   ,ASCIZ  <15><12>"HARDWARE"
                                          000
                                        000040  ER4I    ,ASCIZ  "    "
                                        051520  ER5I    ,ASCIZ  "    PS="
                                        051122  ER6I    ,ASCIZ  <15><12><12>"ERRORS OCCURRED "
                                        042105
                                        051505  ER7I    ,ASCIZ  " TIMES OUT OF "
                                        047440
                                          000
                                                CRLI    ,ASCIZ  <15><12>
                                        052106  ERNGI   ,ASCII  <15><12>"SOFTWARE DIVIDE DOESN'T MATCH REAL ANSWER,  "
                                        042040
                                        020105
                                        023516
                                        041524
                                        046101
                                        042527
                                        020040
                                        020075  E1I     ,ASCIZ  "LOC = "
                                          000
                                        041501  E2I     ,ASCIZ  <15><12>",AC = "
                                        000040
                                        046456  E3I     ,ASCIZ  "    ,MQ = "
                                          000
                                        046040  E4I     ,ASCIZ  "    LONUM = "
                                        036440
                                        000040
                                        044510  E5I     ,ASCIZ  "    HINUM = "
                                        020075
                                          000
                                          000   E6I     ,ASCIZ  <15><12><12>
                                                        ,EVEN
```

```
 439  003406  010046                 RANDOM: MOV     ,AC,-(6)        ;SAVE R0
 440  003410  010146                         MOV     ,MQ,-(6)        ;SAVE R1
 441  003412  010246                         MOV     R2,-(6)         ;SAVE R2
 442  003414  010446                         MOV     R4,-(6)         ;SAVE R4
 443  003416  016700  000212                 MOV     LONUM,,AC       ;SET R0 WITH LOW
 444  003422  016701  000210                 MOV     HINUM,,MQ       ;SET R1 WITH HIGH
 445  003426  012704  177771                 MOV     #-7,R4          ;SET SHIFT COUNT
 446  003432  005002                         CLR     R2
 447  003434  006300                 1$:     ASL     ,AC             ;SHIFT R0 LEFT AND
 448  003436  006101                         ROL     ,MQ             ;ROTATE CARRY INTO R1 AND
 449  003440  006102                         ROL     R2              ;ROTATE CARRY INTO R2
 450  003442  005204                         INC     R4              ;CHECK FOR DONE
 451  003444  001373                         BNE     1$              ;CONTINUE SHIFT LOOP
 452  003446  066702  000162                 ADD     LONUM,R2        ;ADD NUMBER TO MAKE X 129
 453  003452  005501                         ADC     ,MQ             ;PROPOGATE CARRY
 454  003454  066701  000156                 ADD     HINUM,,MQ       ;ADD NUMBER TO MAKE X 129
 455  003460  005502                         ADC     R2              ;PROPOGATE CARRY
 456  003462  062700  001057                 ADD     #1057,,AC       ;ADD LOW CONSTANT
 457  003466  005501                         ADC     ,MQ             ;PROPOGATE CARRY
 458  003470  005502                         ADC     R2              ;PROPOGATE CARRY
 459  003472  062701  047401                 ADD     #47401,,MQ      ;ADD HIGH CONSTANT
 460  003476  005502                         ADC     R2              ;PROPOGATE CARRY
 461  003500  062702  000006                 ADD     #6,R2           ;ADD HIGHEST CONSTART
 462  003504  060200                         ADD     R2,,AC          ;REPRIME R0 WITH HIGHEST DIGIT
 463  003506  005501                         ADC     ,MQ             ;PROPOGATE CARRY
 464  003510  010067  000120                 MOV     ,AC,LONUM       ;SAVE R0
 465  003514  010167  000116                 MOV     ,MQ,HINUM       ;SAVE R1
 466  003520  012604                         MOV     (6)+,R4         ;RESTORE R4
 467  003522  012602                         MOV     (6)+,R2         ;RESTORE R2
 468  003524  012601                         MOV     (6)+,,MQ        ;RESTORE R1
 469  003526  012600                         MOV     (6)+,,AC        ;RESTORE R0
 470  003530  000207                         RTS     PC              ;RETURN
 471
 472
 473  003532  000004  003236         BAD:    TYPE    ,ERNG
 474  003536  011603                         MOV     (6),TTY         ;TYPE (6) IN OCTAL
 475  003540  004767  000230                 JSR     PC,PRINTS       ;AND SUPRESS LEADING ZERO'S
 476  003544  000004  003323                 TYPE    ,E2
 477  003550  010003                         MOV     ,AC,TTY         ;TYPE ,AC IN OCTAL
 478  003552  004767  000206                 JSR     PC,PRINTR       ;TYPE LEADING ZERO'S
 479  003556  000004  003334                 TYPE    ,E3
 480  003562  010103                         MOV     ,MQ,TTY         ;TYPE ,MQ IN OCTAL
 481  003564  004767  000174                 JSR     PC,PRINTR       ;TYPE LEADING ZERO'S
 482  003570  000004  003347                 TYPE    ,E4
 483  003574  016703  000034                 MOV     LONUM,TTY       ;TYPE LONUM IN OCTAL
 484  003600  004767  000160                 JSR     PC,PRINTR       ;TYPE LEADING ZERO'S
 485  003604  000004  003364                 TYPE    ,E5
 486  003610  016703  000022                 MOV     HINUM,TTY       ;TYPE HINUM IN OCTAL
 487  003614  004767  000144                 JSR     PC,PRINTR       ;TYPE LEADING ZERO'S
 488  003620  000004  003401                 TYPE    ,E6
 489  003624  000207                         RTS     PC
```

```
                                        ;TRT:   RTT
                                        TAD:    0                       ;TRAP ADDRESS
                                        TLOC:   0                       ;TRAP LOCATION
                                        LONUM:  0                       ;RANDOM NUMBER #1
                                        HINUM:  0                       ;RANDOM NUMBER #2
                                        CNT:    0                       ;PASS NUMBER
                                        ERCNT:  0                       ;ERROR COUNT
                                        LAD:    0                       ;LOOP ADDRESS
                                        .TYPE:  0                       ;CHARACTER TYPING LOCATION
                                        ERRORS: 0                       ;ERRORS ENCOUNTERED
                                        TIMES:  256.

                                        AREA:   0                       ;MQ (MULTIPLY)          DIVIDEND RIGHT
                                                0                       ;AC (MULTIPLY)          DIVIDEND LEFT
                                                0                       ;SR (MULTIPLY)          DIVISOR
                                                0                       ;AC (DIVIDE BY LONUM)
                                                0                       ;MQ (DIVIDE BY LONUM)
                                                0                       ;SR (DIVIDE BY LONUM)
                                                0                       ;AC (DIVIDE BY HINUM)
                                                0                       ;MQ (DIVIDE BY HINUM)
                                                0                       ;SR (DIVIDE BY HINUM)

                                        .IOT:   MOV     TTY,-(6)        ;SAVE TTY
                                                MOV     @2(6),TTY       ;GET ADDRESS TO BE TYPED
                                        1$:     TSTB    (TTY)           ;TERMINATOR?
                                                BEQ     2$
                                                MOVB    (TTY)+,@#177566 ;LOAD AND TYPE THE CHARACTER
                                                TSTB    @#177564       ;IS THE PRINTER READY
                                                BPL     .-4
                                                BR      1$              ;GET THE NEXT CHARACTER

                                        2$:     MOV     @2(6),-(6)      ;GET ADDRESS TO BE TYPED
                                                ADD     #2,4(6)         ;ADD 2 TO THE ADDRESS
                                                CMP     (6)+,2(6)       ;IS IT .+2?
                                                BNE     3$              ;NO
                                                ADD     #2,TTY          ;ADD 2 TO THE ADDRESS
                                                BIC     #1,TTY          ;BACK UP TO AN EVEN BYTE
                                                MOV     TTY,2(6)        ;RESTORE ADDRESS
                                        3$:     MOV     (6)+,TTY        ;RESTORE TTY
                                                RTI                     ;RETURN
```

```
  530  003764  112767  000001  000130  PRINTR:  MOVB    #1,4$           ;SET ZERO FILL SWITCH
  531  003772  000402                           BR      .+6
  532  003774  005067  000122          PRINTS:  CLR     4$              ;SUPRESS LEADING ZERO'S
  533  004000  112767  177772  000115           MOVB    #-6,4$+1        ;SET COUNT
  534  004006  010446                           MOV     R4,-(6)         ;SAVE R4
  535  004010  012704  004112                   MOV     #3$,R4          ;SET POINTER TO FIRST ASCII CHAR.
  536  004014  105014                           CLRB    (4)             ;CLEAR FIRST BYTE
  537  004016  000405                           BR      2$              ;ROTATE FIRST BIT
  538  004020  105014                  1$:      CLRB    (4)             ;CLEAR BYTE OF CHARACTER
  539  004022  006103                           ROL     TTY             ;ROTATE BIT INTO C
  540  004024  106114                           ROLB    (4)             ;PACK IT
  541  004026  006103                           ROL     TTY             ;ROTATE BIT INTO C
  542  004030  106114                           ROLB    (4)             ;PACK IT
  543  004032  006103                  2$:      ROL     TTY             ;ROTATE BIT INTO C
  544  004034  106114                           ROLB    (4)             ;PACK IT
  545  004036  105714                           TSTB    (4)
  546  004040  001402                           BEQ     .+6
  547  004042  105267  000054                   INCB    4$
  548  004046  105767  000050                   TSTB    4$              ;CHECK FILL SWITCH
  549  004052  001402                           BEQ     .+6
  550  004054  152724  000060                   BISB    #'0,(4)+        ;MAKE INTO ASCII CHAR
  551  004060  105267  000037                   INCB    4$+1
  552  004064  001355                           BNE     1$              ;REPEAT
  553  004066  022704  004112                   CMP     #3$,R4
  554  004072  001002                           BNE     .+6
  555  004074  112724  000060                   MOVB    #'0,(4)+
  556  004100  105014                           CLRB    (4)
  557  004102  000004  004112                   TYPE    ,3$             ;TYPE IT
  558  004106  012604                           MOV     (6)+,R4         ;RESTORE R4
  559  004110  000207                           RTS     PC
  560
  561  004112  000004                  3$:      .BLKW   4
  562  004122  000000                  4$:      0
```

```
                                        ;       DIVIDE SUBROUTINE
                                        ;
004124  000000                  Z:     ,WORD   0
004126  000000                  COUNT: ,WORD   0
004130  000000                  SR1:   ,WORD   0
004132  000000                  SINE:  ,WORD   0
                                        ;
                                        ;
004134  005702                  DIV:   TST     R2
004136  001004                         BNE     DIVL
004140  012767  000003  177762         MOV     #3,SR1
004146  000207                         RTS     PC
004150  012767  177760  177750 DIVL:  MOV     #-16.,COUNT     ;SET UP STEP COUNTER
004156  005067  177746                 CLR     SR1
004162  005067  177744                 CLR     SINE
004166  005700                         TST     ,AC
004170  100002                         BPL     ,+6
004172  105167  177734                 COMB    SINE
004176  005067  177722         STEP1:  CLR     Z               ;INITIALIZE Z INDICATORS
004202  000241                         CLC
004204  005700                         TST     ,AC             ;CHECK REMAINDER SIGN
004206  100002                         BPL     ,+6
004210  105167  177711                 COMB    Z+1
004214  005702                         TST     R2              ;CHECK DIVISOR SIGN
004216  100002                         BPL     ,+6
004220  105167  177701                 COMB    Z+1
004224  105767  177675                 TSTB    Z+1             ;-1 IF DIFFERENT, 0 IF SAME
004230  100403                         BMI     ,+8,
004232  005267  177666                 INC     Z               ;SET Z=1 IF SAME
004236  000261                         SEC                     ;SET C TO A 1
004240  006101                         ROL     ,MQ             ;ROTATE AC AND MQ ONCE LEFT  STEP2
004242  006100                         ROL     ,AC
004244  105767  177654                 TSTB    Z               ;STEP3
004250  001406                         BEQ     ,+14,
004252  160200                         SUB     R2,,AC          ;SUBTRACT IF Z = 1
004254  106167  177653                 ROLB    SINE+1
004260  105167  177647                 COMB    SINE+1
004264  000403                         BR      ,+8,
004266  060200                         ADD     R2,,AC          ;ADD IF Z = 0
004270  106167  177637                 ROLB    SINE+1
004274  022767  177760  177624         CMP     #-16.,,COUNT    ;CHECK FOR FIRST TIME THROUGH    STEP4
004302  001014                         BNE     STEP8
```

```
                                        STEP6:  TST     ,AC
                                                BLE     STEP8
                                                RORB    SINE+1
                                                BCS     ,+10.           ;IF C AND DIVIDEND ARE
                                                TSTB    SINE            ;       DIFFERENT, AN OVERFLOW
                                                BMI     OFLW            ;       HAS OCCURRED
                                                BR      ,+8.
                                                TSTB    SINE
                                                BPL     OFLW

                                        STEP8:  INC     COUNT
                                                BEQ     ,+6
                                                JMP     STEP1

                                                TST     ,AC             ;BEGINNING OF CORRECTION ROUTINE
                                                BNE     STEP9           ;IF THE REMAINDER IS ZERO,
                                        STEP10: SEC                     ;       SHIFT THE QUOTIENT ONCE
                                                ROL     ,MQ             ;       FILLING WITH "1"
                                        STP9:   MOVB    SINE,R5
                                                TST     R2
                                                BPL     ,+4
                                                COM     R5
                                                TST     R5
                                                BMI     ,+8.
                                                TST     ,MQ
                                                BMI     OFLW
                                                BR      DONX
                                                TST     ,MQ
                                                BLE     DONX
                                OFLW:   BIS     #2,SR1
                                                RTS     PC

                                        STEP9:  MOV     R2,COUNT
                                                BMI     ,+6
                                                NEG     COUNT           ;IF THE DIVISOR WAS (+) NEGATE IT
                                                CMP     ,AC,COUNT       ;IF THE SAME AS REMAINDER, GO
                                                BEQ     STEP11          ;       TO STEP 11

                                                CLRB    Z+1
                                                TST     ,AC             ;COMPARE THE SIGNS OF THE
                                                BPL     ,+6             ;       REMAINDER AND THE
                                                COMB    Z+1             ;       DIVIDEND.  IF THEY
                                                TSTB    SINE            ;       ARE THE SAME, GO TO
                                                BPL     ,+6             ;       STEP 10
                                                COMB    Z+1
                                                TSTB    Z+1
                                                BEQ     STEP10
```

```
 653  004472  005067  177426          STEP11: CLR     Z
 654  004476  005700                          TST     ,AC             ;SET Z=1 IF REMAINDER AND
 655  004500  100002                          BPL     ,+6             ;       THE DIVISOR HAVE THE
 656  004502  105167  177417                  COMB    Z+1             ;       SAME SIGN
 657  004506  005702                          TST     R2
 658  004510  100002                          BPL     ,+6
 659  004512  105167  177407                  COMB    Z+1
 660  004516  105767  177403                  TSTB    Z+1
 661  004522  001003                          BNE     ,+8,
 662  004524  005267  177374                  INC     Z
 663  004530  005201                          INC     ,MQ             ;ADD Z TO QUOTIENT
 664  004532  000241                          CLC
 665  004534  006101                          ROL     ,MQ             ;SHIFT QUOTIENT LEFT ONCE
 666                                                                  ;       FILLING WITH "0"
 667  004536  105767  177362                  TSTB    Z
 668  004542  001402                          BEQ     ,+6
 669  004544  160200                          SUB     R2,,AC          ;SUBTRACT DIVISOR FROM REMAINDER
 670  004546  000703                          BR      STP9
 671  004550  060200                          ADD     R2,,AC          ;ADD DIVISOR TO REMAINDER
 672  004552  000701                          BR      STP9
 673
 674  004554  010046          DONX:   MOV     ,AC,-(6)
 675  004556  010100                  MOV     ,MQ,,AC
 676  004560  012601                  MOV     (6)+,,MQ
 677  004562  005700                  TST     ,AC
 678  004564  001003                  BNE     ,+8,
 679  004566  052767  000004  177334          BIS     #4,SR1
 680  004574  005700          DONE:   TST     ,AC
 681  004576  100003                  BPL     ,+8,
 682  004600  052767  000010  177322          BIS     #10,SR1
 683  004606  005700                  TST     ,AC
 684  004610  001005                  BNE     NXT
 685  004612  005701                  TST     ,MQ
 686  004614  001003                  BNE     NXT
 687  004616  052767  000004  177304          BIS     #4,SR1
 688  004624  000207          NXT:    RTS     PC
```

```
                                        ;       MULTIPLY SUBROUTINE
                                        ;
004626  000000                  CONT:  ,WORD   0
004630  000000                  ONE:   ,WORD   0
004632  000000                  CHEK:  ,WORD   0
                                        ;
004634  005067  177770          MUL1:  CLR     ONE             ;CLEAR Z STEP1
004640  005067  177264                 CLR     SR1
004644  005067  177762                 CLR     CHEK
004650  005000                       CLR     ,AC             ;CLEAR AC
004652  005701                       TST     ,MQ
004654  100002                       BPL     ,+6
004656  005167  177750                 COM     CHEK
004662  005702                       TST     R2
004664  100002                       BPL     ,+6
004666  005167  177740                 COM     CHEK
004672  012767  177760  177726       MOV     #-16,,CONT      ;INITIALIZE COUNT
004700  022701  100000                 CMP     #100000,,MQ
004704  001011                       BNE     CNXT
004706  005702                       TST     R2
004710  100023                       BPL     STEP2
004712  010200                       MOV     R2,,AC
004714  005400                       NEG     ,AC
004716  000241                       CLC
004720  005001                       CLR     ,MQ
004722  006000                       ROR     ,AC
004724  006001                       ROR     ,MQ
004726  000451                       BR      DONE2
004730  022702  100000          CNXT:  CMP     #100000,R2
004734  001011                       BNE     STEP2
004736  005701                       TST     ,MQ
004740  100007                       BPL     STEP2
004742  010100                       MOV     ,MQ,,AC
004744  005400                       NEG     ,AC
004746  000241                       CLC
004750  005001                       CLR     ,MQ
004752  006000                       ROR     ,AC
004754  006001                       ROR     ,MQ
004756  000435                       BR      DONE2
004760  105067  177645          STEP2: CLRB    ONE+1
004764  132767  000001  177636       BITB    #1,ONE
004772  001402                       BEQ     ,+6
004774  105167  177631                 COMB    ONE+1           ;COMP ONE+1 IF Z=1
005000  032701  000001                 BIT     #1,,MQ
005004  001402                       BEQ     ,+6
005006  105167  177617                 COMB    ONE+1           ;COMP ONE+1 IF R1 IS ODD
005012  105767  177613                 TSTB    ONE+1           ;IF THE LOW ORDER BIT IS THE SAME
005016  001406                       BEQ     STEP4           ;AS Z, GO TO STEP4
```

```
005020  032701  000001          STEP3:  BIT     #1,,MQ
005024  001002                          BNE     ,+6
005026  060200                          ADD     R2,,AC          ;ADD MULTIPLICAND IF MQ IS EVEN
005030  000401                          BR      ,+4
005032  160200                          SUB     R2,,AC          ;SUBTRACT MULTIPLICAND IF MQ IS ODD
005034  006200                  STEP4:  ASR     ,AC
005036  006001                          ROR     ,MQ
005040  106167  177564                  ROLB    ONE

005044  005267  177556          STEP5:  INC     CONT
005050  001343                          BNE     STEP2           ;GO TO STEP2 IF NOT 16TH PASS
005052  005700                  DONE2:  TST     ,AC
005054  001416                          BEQ     DO2
005056  005767  177550                  TST     CHEK
005062  100406                          BMI     DON1
005064  005700                          TST     ,AC
005066  100003                          BPL     ,+8,
005070  005401                          NEG     ,MQ
005072  005500                          ADC     ,AC
005074  005400                          NEG     ,AC
005076  000405                          BR      DO2
005100  005700                  DON1:   TST     ,AC
005102  100403                          BMI     ,+8,
005104  005401                          NEG     ,MQ
005106  005500                          ADC     ,AC
005110  005400                          NEG     ,AC
005112  005700                  DO2:    TST     ,AC
005114  001412                          BEQ     DO3
005116  022700  177777                  CMP     #-1,,AC
005122  001011                          BNE     DO4X
005124  005701                          TST     ,MQ
005126  100403                          BMI     ,+8,
005130  052767  000001  176772          BIS     #1,SR1
005136  000167  177432                  JMP     DONE
005142  005701                  DO3:    TST     ,MQ
005144  100003                          BPL     ,+8,
005146  052767  000001  176754  DO4X:   BIS     #1,SR1
005154  000167  177414          DO4:    JMP     DONE

005160  000000                  ;ACX:   0
005162  000000                  ;MQX:   0

        000001                  ;END
```

```
AREA    003654          BAD     003532          BEGIN   001002          BELL    = 000007
CHEK    004632          CNT     003642          CNXT    004730          CONT    004626
COUNT   004126          CRL     003233          DISPLA  = 177570        DIVI    004134
DIVL    004150          DIVP    002576          DIVZ    002662          DOIT    002752
DONE    004574          DONE2   005252          DONX    004554          DON1    005107
DO2     005112          DO3     005142          DO4     005154          DO4X    005146
EQZ     002160          ERCNT   003642          ERNG    003236          ERRORS  003657
ER1D    003046          ER1M    003067          ER2     003110          ER2A    003114
ER3     003120          ER3A    003133          ER3B    003140          ER4     003153
ER5     003160          ER6     003172          ER7     003214          E1      003314
E2      003323          E3      003334          E4      003347          E5      003364
E6      003401          FLOW    002126          GO      001050          HINUM   003636
HLT     = 104400        HLTAD   003042          ICINT   002324          ICNT    001720
ITER    001240          KIT     002340          LAD     003644          LOCX    001710
LONUM   003634          MUL1    004634          N       = 000006        NOH     002413
NOHEAD  003026          NOTY    002326          NXT     004624          OFLW    004406
OK1     001154          ONE     004630          OVR     002344          PC      =%000007
PRINTR  003764          PRINTS  003774          PSOFT   002714          RANDOM  003406
RTIX    002226          R0      =%000000        R2      =%000002        R4      =%000004
R5      =%000005        SAVLAD  002332          SCOPE   = 104000        SECI    002704
SECO    002550          SER     003044          SINE    004132          SP      =%000006
SR1     004130          STEP1   004176          STEP10  004352          STEP11  004472
STEP2   004760          STEP3   005020          STEP4   005034          STEP5   005244
STEP6   004304          STEP8   004334          STEP9   004416          STP9    004356
SWR     = 177570        SW10    = 002000        SW11    = 004000        SW12    = 010000
SW13    = 020000        SW14    = 040000        TAD     003630          TEMP    002170
TIMES   003652          TLOC    003632          TRPB    002172          TTY     =%000703
TYPE    = 000004        Z       004124          .AC     =%000000        .ACX    005160
.EMT    002174          .ET     002402          .IOT    003676          .MQ     =%000001
.MQX    005162          .SR1    001512          .SR2    001610          .SR3    001752
.TRP    002360          .TRT    003626          .TYPE   003646          .       = 005164
```

ERRORS DETECTED: 0